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REPORT RESUMES

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THE QUALITY MEASUREMENT PROJECT, A RESEARCH ACTIVITY CONDUCTED BY THE NEW YORK STATE EDUCATION DEPARTMENT.
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THE PURPOSES OF THE QUALITY MEASUREMENT PROJECT WERE TO DEVELOP TECHNIQUES FOR ASSESSING THE QUALITY OF EDUCATION PROVIDED BY A SCHOOL SYSTEM AND TO PUT INTO THE HANDS OF SCHOOL ADMINISTRATORS EFFECTIVE PROCEDURES FOR IDENTIFYING AREAS OF WHICH IMPROVEMENT MAY REASONABLY BE EXPECTED, GIVEN THEIR OWN LOCAL CONDITIONS. THIS STUDY SAMPLE CONSISTED OF 97 SCHOOL DISTRICTS REPRESENTATIVE OF THE 1,700 DISTRICTS IN NEW YORK STATE. SUPERINTENDENTS WERE ASKED TO IDENTIFY CRITICAL PROBLEMS WHICH HAVE ARISEN RECENTLY AND WHICH RELATE IN SOME WAY TO THE QUALITY OF THE SCHOOL. IN THE FIRST YEAR OF THE PROJECT, INFORMATION WAS SECURED ON INDIVIDUAL SYSTEMS, STAFF CHARACTERISTICS, LEVEL OF FINANCIAL SUPPORT, AND INFORMATION ABOUT SCHOOL PRACTICES IN THE PARTICIPATING SYSTEMS. THE PROJECT ACCUMULATED, FOR INDIVIDUAL PUPILS ACROSS THE SAMPLE OF SYSTEMS, DATA ON SOCIOECONOMIC STATUS, MEASURED IQ, AND ACHIEVEMENT IN A NUMBER OF SKILLS AREAS AT THREE DIFFERENT GRADE LEVELS. CONCLUSIONS WERE THAT EXPENDITURE IS POSITIVELY RELATED TO SCHOOL SYSTEMS EFFECTIVENESS. ADDITIONAL MONEY SPENT FOR INSTRUCTION GOES, IN PART, FOR THE EMPLOYMENT OF A BETTER PREPARED STAFF AND FOR SPECIAL EDUCATIONAL SERVICES. BETWEEN SYSTEMS WHICH ARE CLOSELY MATCHED, THE SYSTEM WHOSE TEACHERS ARE MORE SUBJECT ORIENTED WILL TEND TO PROMOTE HIGHER ACHIEVEMENT IN THE SKILL AREA. THE QUALITY MEASUREMENT PROJECT HAS OPENED UP A MAJOR FIELD FOR LONG-RANGE RESEARCH AND DEVELOPMENT. A BASIC FUND OF DATA ON SCHOOL SYSTEM INPUT, PROCESS, AND OUTCOMES HAS BEEN SECURED. THE DATA HAVE BEEN USED TO PROBE THE CRITICAL ISSUE IN QUALITY ASSESSMENT OF HOLDING THE FACTOR OF INPUT CONSTANT WHILE MEASURING OUTCOME. (GC)

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THE QUALITY MEASUREMENT PROJECT

A Research Activity

Conducted by

The New York State Education Department

U. S. Office of Education
Contract OE-6467

December 1958
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To: The Assistant Commissioner for Research, U.S. Office of Education

Subject: Terminal Report on Research Conducted under Contract OE 6467

Date: December 30, 1958

This is the terminal report on research activity conducted by the New York State Education Department with the financial cooperation of the U.S. Office of Education, under Contract OE 6467.

The research project initiated under these joint auspices is still on-going, as originally intended by the New York State Education Department and as described in Appendix A of Contract OE 6467. The enterprise is known as the Quality Measurement Project and will be referred to by that name hereafter in this report.

Research funds of the Office of Education were programmed to contribute partial support for this project for the period February 1957 through April 1958. Functionally, certain major data-gathering activities involving pupil-testing coincided with the School-Year 1957-58 and terminated in June rather than in April 1958. Permission was therefore asked to extend the date for reporting on Contract OE 6467 to make it possible to capitalize in the report on data-analyses accomplished during the summer school recess beginning in June 1958.

SCHOOL SYSTEMS PARTICIPATING IN THE QUALITY MEASUREMENT PROJECT

City School Systems

- Amsterdam
- Batavia
- Binghamton
- Buffalo
- Corning
- Cortland
- Fulton
- Glens Falls
- Hornell
- Hudson
- Ithaca
- Jamestown
- Johnstown
- Lackawanna
- Long Beach
- Mount Vernon
- Niagara Falls
- Oneonta
- Plattsburgh
- Rochester
- Rome
- Rye
- Schenectady
- Syracuse
- Utica
- Watertown
- Watervliet

Village School Systems

- Albion
- Bay Shore
- Bedford-Mt. Kisco
- Brighton
- Bronxville
- Dobbs Ferry
- East Greenbush
- East Meadow
- East Rochester
- East Rockaway
- Garden City
- Great Neck
- Harrison
- Hastings-on-Hudson
- Hempstead
- Huntington
- Lancaster
- Liverpool
- Manhasset
- Nyack
- Ossining
- Oyster Bay

Village School Systems, cont.

- Pearl River
- Rye Neck
- Scarsdale
- Solvay
- Suffern
- The Tarrytowns
- Tuckahoe

Central School Systems

- Addison
- Averill Park
- Barker
- Bemus Point
- Bethlehem
- Brewster
- Broadalbin
- Canton
- Delevan-Machias
- Dryden-Freeville
- Eden
- Fort Edward
- Goshen
- Greenburgh
- Herkimer
- Highland
- Homer
- Horseheads
- Icabod Crane
- Iroquois
- Lewiston-Porter
- Madrid
- Mohawk
- Palmyra-Macedon
- Red Hook
- Rhinebeck
- Royalton-Hartland
- Schoharie
- Star Point
- Warsaw
- Warwick
- Yorktown

Common and Union Free School Systems

- Cherry Road
- Fremont
- Mechanicstown
- Amherst
- Floral Park
- Locust Valley
- North Merrick

ACKNOWLEDGMENTS

To here acknowledge the cooperation of the almost 100 chief administrative officers of the school systems participating in the Quality Measurement Project is only to begin to recognize the part that school personnel have played in launching the Project. Heads of research bureaus, guidance departments, and pupil personnel services served in many systems as liaison officers with us, to help explain the purposes of the enterprise to their colleagues and to arrange the testing programs conducted in the School Year 1957-58 in behalf of the Project. In some systems, guidance personnel or members of school psychological staffs administered the tests to pupils; in other systems, classroom teachers performed this service. It is not an exaggeration to state that we are indebted to more than 2,000 administrators, teachers, and special bureau staff for working with us this past year. They have helped to create a unique State-wide educational research laboratory for the continuing study of the problem of school system assessment.

To our multitude of colleagues in this research, whom we can not possibly name individually, we express our thanks for their part in supplying us with the data reported in this volume.

A report of this sort is, of course, the end result of much work on the part of all members of our central research team. It is a pleasure to acknowledge:

Dr. Joseph Lev, Acting Director of the Bureau of Statistical Services of the State Education Department for his strong contributions to the design for the mathematical treatment of our data and for his personal attention to our correlational analyses.

Dr. John E. Bicknell, now Director of Research for the Minnesota State Education Department, for his efforts in promoting the longitudinal aspects of the Project as much as possible before taking leave of our staff for his new position and for personally computing the analyses of regression and of variance here reported.

Mr. Berton G. Bulles, Research Assistant, Quality Measurement Project, for the excellent job that he performed as field representative of the Project in making the logistical arrangements for the distribution of the great quantities of test materials.

Dr. Clifford H. Christensen, Research Associate, Quality Measurement Project, for his part in the development of the battery of personality and attitude inventories administered in a subsample of the participating school systems and for supervising the details of test scoring and of preparation in this office of data for processing through the Bureau of Statistical Services.

Mr. Kenneth Duryea, Head of the Machine Room of Statistical Services, for doing everything in his power to move as much of our great fund of data through his facility in the least possible time.

Dr. Irving Lorge, Director of the Institute of Psychological Research, Teachers College, Columbia University, has held a continuing research consultancy to the Project since its inception. He has contributed much to our research and data-analysis designs and has critiqued the original draft of this report.

Two other staff members performed, with great proficiency, the essential production chores involved in getting a mass of manuscript into readable form: Mrs. Marion Brevetti, Secretary to the Quality Measurement Project, and Mr. John Winnie, Statistical Clerk.

Samuel M. Goodman

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PROJECT PURPOSES AND RESEARCH DESIGN

The purpose of the Quality Measurement Project is both to develop techniques for assessing the quality of education provided by a school system and to put into the hands of school administrators effective procedures for identifying areas in which improvement may reasonably be expected given their own local conditions. *

Rationale

The Quality Measurement Project is predicated upon the fact that the local school system is the basic educational unit in American education. This is obviously true from the legal standpoint and from the standpoint of financial support. Popularly, also, the school system is considered a unit. Even laymen do not hesitate to compare system with system, declaring one better (or worse) than another. The profession itself reflects the belief that systems, as systems, differ in effectiveness by the widespread practice among educational administrators of demonstrating, by the use of selected tests, that a whole system compares either favorably or unfavorably with some published norm. Further, surveys of school practices have revealed system differences in methods and procedures that would be expected to result in among-system differences in outcomes, either with all pupils or at least for different types of pupils among systems.

If there are system-to-system differences in effectiveness in achieving the major goals of American public education, then one avenue to the improvement of American education must lie in the detailed study of these differences. If differences are found to exist among systems that are ostensibly similar to one another as regards local setting and institutional potential, then the front-runner sets a standard that is demonstrably achievable; and the challenge is for the other similar schools to set about finding ways to improve. In one sense, then, institutional improvement can become a sort of educational "operation bootstrap". In another sense, the way would also be paved for the exercise of inventiveness that may enable all schools with similar institutional potential to work in common to find ways of breaking through to new levels of quality.

The special feature of the Project, in its approach to quality assessment, is that it directs attention to variation among systems that seem to have similar institutional potential, in terms of controlling factors in the local setting that the schools themselves cannot readily influence -- like type of community (e.g., urban vs. rural)

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* These objectives of the Study are referenced in the following paragraphs of Appendix A to Contract OE 6467.

Paragraph 1: "Title -- The Development and Refinement and Testing of tools, Descriptive Devices, and Analytical Methods for Measuring School Quality in Terms of Specific Educational Goals: the Development of a Set of Quality-Control Tools and Procedures for Institutional Improvement in a Context of Controllable Characteristics."

Paragraph 2. 1 (under Problem to be Investigated): "School systems and schools within systems vary in terms of quality and emphasis. What is the nature and amount of this variation among schools or systems? What is the amount and nature of variation of individual and specified schools or systems with time as the dimension? (This is the focus of the first year's study under this proposal.)"

Paragraph 3. 1 (under Major Objectives): "To make available to local school administrators an essential organization of testing and summarizing tools (some new and some refocused) that can be used for periodic and continuous quality-control or audit of schools or school systems."

Paragraph 4. G. 1 (under Expected Products): "A quality-control package for use in the schools of New York State or other states."

or like socio-economic level of the community.*

The Quality Measurement Project was programmed to begin with the use of a limited number of available standardized measures of school system effectiveness as quality measures indicative of among-system variation.

Subsequent phases of the project are blueprinted to: expand the battery of measures of pupil outcomes that can be used as evidences of system effectiveness**; identify factors of program, practice, staffing, support, and the like, which are related to superior effectiveness and are at the same time within the control of the school***; study the usefulness, in systems quality-assessment, of variation in

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* In Appendix A to Contract OE 6467, the need to classify systems for purposes of quality assessment is referred to in the following paragraphs:

a. Paragraph 2.2 (under statement of Problem to be Investigated): "... What aspects of community characteristics, administrative method, legal setting, etc., can account for measured and consistent variation, one school from another or the same school at two different times?"

b. Paragraph 3.3 (under Major Objectives): "To frame up a method of bench-mark establishment for specified communities and groups of students so as to be able to watch institutional evolution."

c. Paragraph 4.E.1.b and 4.E.1.c (under Analyses): "Identify predictable patterns of achievement for various categories of school systems."

"Explore the suitability of equating the measurements of achievement in terms of measures of capacities of school systems."

d. Paragraph 9 (under Additional Explanatory Remarks): "Institutional quality must be assessed in context with what can be reasonably expected of the situation. A school with very intelligent children, from fine homes, supported at a high per-pupil rate, located in a community rich in libraries and museums can't take pride in equaling national "norms" on standardized tests. Conversely, no one can blame the school where every force is against it for failing to meet such "norms". Needed is a sorting out of "those conditions that are of the nature of things and simply must be allowed for, such as socio-economic stratification and historical traditions and forces."

** Appendix A to Contract OE 6467, paragraph 4.B.1 (under proposals for research after first year): "Continue the development of more adequate testing and surveying instruments in order to get measures of greatest breadth and re-inforcing validity." Also, paragraph 4.E: "New data will be sought not only as to conditioners of school and pupil performance (which must be accounted for in projecting desirable frequency distribution on various pupil tests) but also as to what is consistently "testable" among those things which students are expected to have learned or have developed attitudes towards. New instruments will undoubtedly have to be created to test some of these things."

***Ibid., paragraph 2.3 (under Problem to be Investigated): "Presumably the things that affect school quality fall into one or another of these three categories: (1) relatively immutable items, (2) items responsive to change but not in the control of local administration, and (3) items which local administration can change. What are the things that local administration can do that will make a difference? (Focus of study after the tools of quality measurement have been refined; after the first year.)"

pupil-measures secured longitudinally over a span of years *; and study the interrelationships among measures with a view to reducing the number of measures required to secure stable quality assessments of systems **.

The projected time span for the Project is five years*.**.

The hypotheses that dictated first-year research action were as follows:

Hypothesis 1. There is variation in quality among school systems, when the indices of quality are pupil outcomes measured by available standardized tests.

Implied in this statement are three assumptions: 1. The most desirable measures of the quality of school systems would be measures of the long-term effects that schools have on pupils. Lacking these, the most defensible measures of quality of systems are measures applied to pupils while they are still in school. Quality of systems is a composite of "effectiveness" in achieving many educational goals, not just one or two goals like competency in reading or competency in computation. Research on systems-quality must therefore begin by seeking evidence, from pupil-measures, of system-to-system variation in effectiveness in achieving a complex of basic goals of American education. Ultimately the number of areas in which pupil measures must be sought for systems quality assessment may be reduced on the basis of data on inter-test correlations. However, the battery of pupil measures must, through research, be expanded before the principle of parsimony in measurement can properly be invoked. 3. Variation among systems, generally assumed, must still be demonstrated under research conditions. Available standardized tests are intended primarily for individual pupil assessment and guidance. There has been little research-oriented study of the operation of these measures for systems assessment.

Hypothesis 2. Among groups of systems classified according to institutional potential, there is significant variation in quality on pupil outcome measured by the instruments used in the first year of the Project.

This is the key issue. The discovery of variation in quality among systems that are similar in institutional potential is, as stated, the first step in a program for improving the general level of American education.

The institutional potential of a school system is no doubt a function of a multiplicity of factors in the community setting that it is not within the power of school administration to change; for example, the economic bases of the community, the average income of wage-earners, the percentage of home ownership vs. tenancy, and the average educational level of the adults. These factors are for all practical purposes "immutables" as far as the school administration is concerned. Since these kinds of factors are elements of what is usually considered socio-economic level, it was decided for this first year to use a socio-economic index as a measure of institutional potential for purposes of school-system classification.

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* Ibid., paragraph 4.E.3 (under Analyses): "Longitudinal analyses of pupil achievement scores will be carried out so that individual growth curves can be established for pupil growth through time."

** Paragraph 4.E: "Part of the Project is also concerned with providing the simplest and most economical 'packages' for criteria purposes and local quality control. Therefore, the tools of analysis will be used to prune out duplicating measures as well as to identify needed ones."

*** Appendix A of Contract OE 6467, Paragraph F: "The time schedule for the entire development of this project embraces a period of five years. However, useful results should be forthcoming within the fifteen month period specified in this proposal. Within the first full year of operation (from April 1,1957 to March 31, 1958) the fundamental sample can be set up, data on hand (locally or in central records) can be marshalled, existing tests applied, and frequency distributions for schools on such tests compiled."

Hypothesis 3. System variation in quality is the same for all categories of pupils, if pupils are classified according to educational potential.

To discover that a given system ranks high or low, when judged on the basis of average performance of all its pupils on some criterion measure, is to take only the first step in assessing the quality of the system. It is perhaps even more important to ascertain how the system ranks for different categories of pupils, when pupils are classified according to their educational potential. Assuming that pupils in each system of a group of systems are classified into three categories (High-Average-Low) as regards educational potential, it would be important to ascertain how any one system ranks, in comparison with the other systems, with both its high potential group, its average-potential group, and its low-potential group. Quality assessments based on figures for total populations in systems may mask considerable variation in the quality of education provided to different categories of pupils. The goal of American public education is to capitalize maximally the potential of all types of pupils. A necessary requisite toward this goal is the development of procedures for identifying "unevenness" within systems in effectiveness with different types of pupils.

Hypothesis 4. Variation in quality of systems is related to factors that are within the control of school administration:

Just as it must be hypothesized that the institutional potential of school systems is related to community factors not within the control of the schools, it must also be hypothesized that there are factors related to among-system variation in quality that are within the immediate control of schools or that can be influenced over a brief period of time. School programs and instructional practices, for example, are controlled by school leadership. So are staff-recruitment and staff-improvement policies and practices. There may be limits to the funds that a district can or will provide for education, but the responsibility for developing, defending, and gaining support for adequate budgets rests with school administration; and the use of funds that are made available is the responsibility of school administration. It must be assumed that variation in educational programs and teaching procedure, staff, and support are related to variation in school system quality. In its first year, the Project did not undertake to make exhaustive study of such inter-relationships, but it did make provision in its research plan to get some first-order evidence on such relationships.

The First-Year Research

Action Plan

The first-year research action-plan involved: the selection of a sample of systems to provide a statewide research laboratory, surveys of the availability of needed data from the sample, the selection and administration of tests to secure data on system effectiveness in achieving a limited number of basic educational goals, the development of data for classifying systems in terms of institutional potential, the accumulation of data for classifying pupils in terms of educational potential, a survey of educational practices in the sample of participant school systems, and the marshalling of selected information about staff characteristics and fiscal support of the systems in the sample.

Selection of the Sample of School Systems

The Quality Measurement Project is being conducted in a sample of approximately 100 school systems*. Originally 103 systems accepted invitations to participate, but local condition that developed during the year reduced the sample-size to 97 systems that were able by the clo of this year to complete the data gathering and testing activities requested by the Project.

At the time the sample was drawn, there were approximately 1700 school districts in the State of New York. However, more than half of these systems were either non-operating or were very small systems operating at the elementary level only, with fewer than one teacher per grade. There were, however, 821 school systems that were operating at least an elementary program and that had different classes at each level.

Five kinds of data about all 821 school systems available to the State Education Department were used in constructing the sample; viz., (1) size of pupil enrollment in Kindergarten through Grade 6, (2) per-pupil expenditure for instructional purposes, (3) per cent of school expenditure received through State-Aid Program, (4) legal classification of the school district, and (5) full valuation of assessed real estate in school district.

The size of school population was, in the final analysis, the major constraint in the selection of the sample. Of the 821 systems considered, 328 had enrollments of fewer than 400 pupils. At the other extreme, there were upwards of about 20 large systems from among which it would have been difficult to sample since each had characteristics almost unique to itself. Any random sampling procedure would have overloaded the sample with very small systems which are a fast-disappearing phenomenon in New York State and would have eliminated some of the larger systems, which in all logic could not be eliminated from the study. The decision therefore was to include only a few of the very small systems in the sample, to include all of the major systems, and to make certain that there was a fair representation of systems ranging from 400 to 2500 pupils. Table 1 indicates the distribution of systems in the sample by pupil population, Kindergarten through grade 6.

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* Appendix A to Contract OE 6467 indicates in Paragraph 4. C. 3 that the Project would work with a sample of 100 school systems.

Table 1

Distribution of Systems in Sample by Pupil Population Kindergarten through Grade 6

Pupil Enrollment	Number of Systems
100-199	3
200-299	1
300-399	1
400-499	9
500-599	6
600-699	10
700-799	7
800-899	7
900-999	3
1000-1099	9
1100-1199	1
1200-1299	4
1300-1399	4
1400-1499	1
1500-1599	5
1600-1699	4
1700-1799	3
1800-1899	1
1900-1999	1
2000-2099	1
2100-2199	1
2200-2299	1
2300-2399	2
2400-2499	1
2500-3499	1
3500-4999	4
5000-6999	1
7000-7999	4
8000-8999	1
"Big Six"	6
	103

These 103 systems included representation from all five major legal classifications used in the State; viz.:

City systems	30
Village-Union Free	23
Central	30
Village-Central....	4
Union Free	10
Common	6

The 103 systems included a range of per-pupil expenditure from $250 to more than $750, as indicated in the following tabulation:

Expenditure per pupil	Number of systems
Under $250	5
$250 - 299	10
300 - 349	23
350 - 399	25
400 - 449	14
450 - 499	11
500 - 549	7
550 - 599	3
600 - 649	2
650 - 699	1
700 - 749	1
Over 750	1

The sample included systems receiving as little as 10% and as much as 80% of their total school expenditures from the State Foundation Program, as follows:

Percentage of Expenditure Received from State Aid	Number of Systems
10 -- 19.9	14
20 -- 29.9	19
30 -- 39.9	21
40 -- 49.9	13
50 -- 59.9	21
60 -- 69.9	9
70 -- 79.9	4
80 -- 89.9	2
	103

The community wealth of systems as measured by full valuation of assessed real estate per pupil, ranged from less than $5, 000 to more than $60, 000, as follows:

Full valuation of assessed real estate per pupil	Number of systems
Under $5, 000	1
$5, 000 - 9, 999	3
10, 000 -14,999	19
15, 000 -19, 999	21
20, 000 -24, 999	17
25, 000 -29, 999	14
30, 000 -34, 999	6
35, 000 -39, 999	7
40, 000 -44, 999	6
45, 000 -49, 999	2
50, 000 -59, 999	2
Over $60, 000	2

The sample of systems, as finally constructed, was inclusive as to range on all the dimensions noted above In terms of size, it included some of the smallest systems as well as most of the largest, and it was reasonably representative of the middle range of systems. In terms of financial characteristics, it contained systems at both extremes of the distributions, as well as strong representation of systems in the middle range.

Classifying Systems in Terms of Institutional Potential

The term "institutional potential" refers in this study to characteristics of the community setting which would tend to act as ultimate controls on the kind of system possible in the school district. Local tradition about education, the educational level of the adult population, income levels, and the general cultural milieu are among the complex of factors that come to mind in this connection.

Census data are one source of information on some community characteristics of this sort -- particularly census data about community wealth, home ownership, mean adult educational level, percentage of adults with varying levels of education, average income, percentage of different income levels, percentage of adults occupied in the professions, and percentage occupied in the unskilled occupations. For the sample of systems, therefore, relevant census data on these factors were summarized and catalogued.

School districts and census tracts are, however, coterminous only for cities and villages that do not serve outlying areas. "Enlarged city systems" which encompass both the corporation limits and suburban environs and village systems which serve pupils living beyond the village limits proper can not be accurately described by census data; and, of course, centralized school districts and rural school districts are not coterminous with county census tracts.

Because of these facts, the Project secured, through a survey of the pupil populations, an estimate of socio-economic level of adult population that was equally applicable to all of the school districts in the sample. For each pupil included in the testing program, father's occupation was reported by the classroom teacher. This item of information was translated into a socio-economic index through the use of the Edwards Scale. * Each pupil's father or legal guardian and, by implication, the student himself, was thus classified on a 9-point socio-economic scale. It was assumed that, for a system, the average of socio-economic ranks for parents of pupils would be a general measure of the socio-economic status of the community.

Classifying Pupils in Terms of Educational Potential

The Project secured two kinds of data that could be used for classifying pupils in terms of their educational potential.

The information about parental occupation, just discussed, was one of these two types of data. It may be assumed that the pupil's socio-economic circumstances contain a complex of familial and community influences upon his educational aspirations, attitude toward education, and educational potential. It seemed reasonable, therefore, to consider the socio-economic index for each pupil as one indicator of educational potential.

The Lorge-Thorndike Intelligence Tests Series (Verbal) was used to secure another measure of pupil potential. Admittedly, performance on any intelligence test is, in some measure, influenced by experience in school. However, intelligence tests are strong predictors of academic success; and it was with this fact in mind that the series was selected for use by the Project.

The Use of the Standardized Achievement Test as Quality Criteria

The quality of a school system is, in the final analysis, measured by its impact upon pupils. Ideally, it would be desirable to measure, in terms of pupil behavior, how effective a system has been in achieving each of the major goals of American education.

By the term "major goals" reference is made to the outcomes that it is every pupil's right to pursue to the limit his educational potential -- whether that potential is high, average, or low: for example, competency in the basic skills, appreciation of and interests in knowledge and matters intellectual, knowledge of and interest in our cultural heritage, vocational and educational awareness and planning, human relations understandings, and citizenship values.

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* Edwards, Alba M. Alphabetical Index of Occupations, by Industries and Social-Economic Groups. Washington (U.S. Department of Commerce): U.S. Printing Office, 1937

Available standardized measures are, of course, concerned primarily with achievement in the skills and content aspects of education. In its over-all plan, the Quality Measurement Project is interested in expanding the number of outcomes that can be evaluated via pupil-measures; but the decision for the first year of the Project was to rely on available achievement tests as quality indices, recognizing that these measures would provide only a partial estimate of the quality of any system.

When the Project was in the planning stage, it was assumed that it might be possible to secure research-worthy data on achievement tests from systems, as by-products of the testing programs conducted by the systems themselves. It was also assumed that the pupils' cumulative records, which might be already available in central administration offices, would be useful in initiating longitudinal studies of pupil growth patterns.

Two surveys were undertaken to ascertain whether such test information was available in form useful for the Quality Measurement Project.

One of these was a questionnaire survey of current testing programs in the sample of school systems*. In brief, the survey indicated that systems vary considerably in the amount of achievement testing that they support and in the kinds of tests that they use, and that variation is too great to support the initial research needs of the Project. The other survey involved the cumulative records available in school administrative offices**. Only a small percentage of the systems in the sample was found to have readily available longitudinal test data on their pupils; and, among those that did have such data, variation in the span of years covered, in the tests used, and in procedures for reporting was too great to permit ready use of the records by the Project. It was therefore necessary for the Project to select an achievement battery for across-the-sample use in its studies, both to secure horizontal data for the first year and to initiate the accumulation of research-worthy longitudinal data.

The instrument selected for use in the elementary and junior high school levels was the Iowa Tests of Basic Skills, and in the high school level, the Iowa Tests of Educational Development.

The Iowa Tests of Basic Skills include eleven subtests. A composite score is provided as an index of pupil performance across the battery. Separate scores are derived for five major tests in the battery: vocabulary, reading comprehension, language skills, work-study skills, and arithmetic skills. Within the language skills tests, separate subscores are provided for spelling, capitalization, punctuation, and usage. The work-study test provides three subscores: map-reading, reading graphs and tables, knowledge and use of reference materials. There are two part-scores for the arithmetic-computation and problem solving. In all, fifteen different scores are provided by the Iowa Tests of Basic Skills.

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* The survey of testing programs of systems is reported in Appendix A.

** The survey of cumulative pupil records is reported in Appendix B.

The Iowa Tests of Educational Development provide, in addition to a composite score for the general performance on the entire battery, separate scores on the followin nine subtests:

Understanding of Basic Social Concepts
Background in Natural Sciences
Correctness and Appropriateness of Expression
Ability to do Quantitative Thinking
Ability to Interpret Reading Materials in the Social Studies
Ability to Interpret Reading Materials in the Natural Sciences
Ability to Interpret Literary Materials
General Vocabulary
Uses of Sources of Information.

The Iowa batteries were selected because of the wide coverage that they provide in the skills and basic content areas. This feature, of course, the Iowa batteries share with several other batteries. A not inconsiderable practical factor in selecting the Iowas was the availability of an electronic scoring service, which had considerable appeal in an enterprise of the size of the Quality Measurement Project.

Other Instruments Used during the First Year of the Project

In addition to the intelligence and achievement tests, the following instruments were used for securing data during the first year of the Study:

1. S-D Scales: An attitude-toward-subject-matter inventory--This instrument was developed by the Project. Six evaluative scales were selected from Osgood's Semantic-Differential*; viz., nice--awful, pleasant--unpleasant, fair--unfair, good--bad, happy--sad, sweet--bitter. Each scale consisted of five step-intervals. The school subject to be rated was identified in the heading to each item and was followed by the six scales. For example, the item used to secure pupil reaction about art appeared as follows:

Art

nice ____: ____: ____: ____: ____: awful
pleasant ____: ____: ____: ____: ____: unpleasant
fair ____: ____: ____: ____: ____: unfair
good ____: ____: ____: ____: ____: bad
happy ____: ____: ____: ____: ____: sad
sweet ____: ____: ____: ____: ____: bitter

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* Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. The Measurement of Meaning. Urbana, Illinois: University of Illinois Press, 1957.

The pupil was required to rate each course or subject area on all six of these evaluative scales by checking the step interval on each scale that best reflected his reaction.

A numerical value of from 1 to 15 was assigned to each of the step intervals on each scale, beginning with the value 1 on the extreme positive end. The sum of the values of all six scales for any one subject area was the measure of pupil reaction to that area. The subject areas to which reaction was secured were the following: art, music, mathematics, science, citizenship education, English, physical education, and reading.

These six items, designated the S-D Scales (semantic-differential scales), were intended as a type of outcome measure for experimental use in the first year of the Study.

A copy of the S-D Scales and the instructions for their use appear in Appendix C.

2. S-E Index: A measure of Socio-economic status--In order to secure in a subsample of systems a second measure of socio-economic level to compare with the index derived from the occupation of fathers, the Project developed a 27-item schedule consisting of questions that were adapted from the Sims Score Card and Gough Home Index. Fourteen (14) of the items concerned evidence of material wealth in the home; 5, reading material in the home; 4, parental education; 2, parental participation in clubs and social activities; and 2, pupil participation in clubs and private lessons in the arts at family expense. The S-E Index was pretested in two schools in Albany, New York, which were known to differ radically with regard to the socioeconomic status of the parents of the pupils. On the basis of this administration, individual questions on the S-E Index were item-analyzed. On the S-E Index, as finally revised, the mean difference between the two schools was statistically significant, and there was little overlap between the two distributions.

A copy of the S-E Index is provided in Appendix D.

3. The P-T Scale: An inventory of pupil feeling about adults and life in gener
--The Project experimented with this inventory as an instrument for classifying pupils according to general reaction to people and to life in general. The P-T Scale* makes an effort to assess the pupil's trust vs. mistrust of people and optimism vs. pessimism about life. The instrument was suggested by scales developed by Isador Chein in a study of delinquent and non-delinquent boys and of teen-age addicts and non-addicts in New York City. Ten of the items involve the pupil's perception of parents; e.g., "Parents don't want their kids to have any fun," and "Everything parents want their kids to do is for the kid's own good." Twelve of the items reflect the pupil's perception of people in general, e.g., "Everybody is just out for himself," and "Most people will help you when you are in trouble." Two items refer to general

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*Pessimism-Tolerance Scale

attitude toward life values, e.g., "The thing to do is to live for today rather than to plan for tomorrow," and "The way things look for the future, most people would be better off if they were never born."

Approximately half of the items were selected from scales developed by Dr. Chein; the others were developed by the Project. The scale was tried out in one system, and it was found that there is no relationship between the S-E Index and the P-T Scale.

A copy of the P-T Index is provided in Appendix E.

4. The Growing Edge is an observation schedule, developed by Mort, Vincent, Newell, which was used in the sample of participating school systems as a device for describing systems' differences in educational practices. The Growing Edge is designed to provide a measure of the extent to which a system emphasizes life-like situations or experiences close to the pupil, capitalizes on pupil initiative, stimulates pupil participation in the planning and development of learning enterprises, and makes provision for variety and novelty in teaching and in the selection of content.

A more detailed description of The Growing Edge appears in Appendix F.

5. Teacher Characteristics Schedule, developed by David Ryans, is a paper-and-pencil inventory of teacher preferences, judgments, choice of activity, and personal background information. It consists of multiple-choice and check-list type items secured to provide measures on the following ten types of behavior:

1. Understanding, friendly vs. aloof, egocentric, restricted classroom behavior.
2. Responsible, business like, systematic vs. evading, unplanned slipshod classroom behavior.
3. Stimulating, imaginative, surgent vs. dull, routine classroom behavior.
4. Favorable vs. unfavorable opinions of pupils.
5. Favorable vs. unfavorable opinions of democratic classroom procedures.
6. Favorable vs. unfavorable opinions of administrative and other school personnel.
7. Learning-centered ("traditional") vs. child-centered ("progressive") educational viewpoints.
8. Superior verbal understanding (comprehension) vs. poor verbal understanding.
9. Emotional stability (adjustment) vs. instability.
10. Avoidance of excessive use of self-boosting and socially acceptable responses (validity of response) vs. excessive use of self-enhancing responses.

Appendix G contains a copy of the Teacher Characteristics Schedule. This instrument was selected for experimental use as a means of describing differences in approach to the educative process, attitude toward pupils, preferences in methodology, and approach to classroom arrangement among the teaching staffs from system to system.

Use of Systems-Information Available from State Education Department Reports.

The selection of the sample of systems to participate in the Quality Measurement was, as stated, based upon a study of information about all school districts in New York State in the files and published reports of the State Education Department. When the sample had been constructed, an effort was made to catalogue, for each participating system, the available information about staff characteristics, teacher-pupil ratio, strength of supervisory complement, special-services personnel, and other factors hat might be presumed to be related to program and practice and, hence, to pupil outcomes.

These kinds of information were secured with the idea in mind of studying the nter-correlations among selected systems-characteristics and outcomes on the chievement measures and other pupil measures described above.

Plan for Administering the QMP Battery ests and Other Instruments

In its first year, the Quality Measurement Project concentrated its activity in grades 4, 7 and 10 of the participating systems. By testing in these grades, the Project ecured measures of the impact of programs at three major points in the educational sequence--at the end of the primary grades (K--3), at the end of the elementary period, nd at the end of the junior high school period. At the same time, the Project by esting in these three grades initiated its longitudinal studies* of pupils and systems at he beginning of three major divisions in the educational sequence--respectively, the pper elementary level (4--6), the junior high school level (7--9), and the senior high chool level (10--12).

All of the participating school systems were asked to administer in their Grades 7, and 10, both the intelligence tests and the achievement batteries described above. the larger systems, the tests were administered to a sample of pupils in these three rades, but in most of the systems all pupils in these grades were tested. Appendix H a summary of the number of pupils tested in each grade and each participating school ystem. The Total number of pupils tested in the intelligence tests were: 27, 692 in rade 4; 21, 178 in Grade 7; and 22, 743 in Grade 10. The totals for the achievement atteries were: 26, 409 in Grade 4; 21, 754 in Grade 7; and 21, 342 in Grade 10. In all, pproximately 70, 000 pupils participated in the testing program.

The participating systems tested at times most convenient to themselves, from te October through mid-May. This variation in timing required the Project to equate hievement test scores to the mid-year point for each school system. The intelligence st scores, of course, required no adjustment.

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ppendix A to Contract OE 6467, paragraph 3.1 (under Major Objectives): "To cumulate and systematize data to be used... in longitudinal studies of individuals d systems..."

The only other data that all systems were asked to supply for all pupils was the information on father's occupation, which, as stated, was used to provide an index of socio-economic status. This information was secured for each pupil at the time that the intelligence tests were administered in each system.

The S-E Index*, P-T Scale**, and S-D Scale***, described above, were administered in Grades 7 and 10 in a subsample of systems that represented considerable socio-economic range as well as range in geographical location. Sixteen (16) systems were selected for this subsample. Some of these systems administered all three of these instruments, but a few systems omitted one or two of the tests. In all, each of the three scales was administered by between 14 and 16 systems.

The Teacher Preference Schedule was distributed to all teachers in the subsample of systems. The schedules were pre-coded to identify system and level (elementary or secondary). The respondent remained anonymous, however. The schedule was returned to the Project by mail by the individual teacher, not through collection by principal or other administrative officer.

The administration of The Growing Edge, the observation schedule used for describing prevailing school practices, followed the pattern developed for its administration by the Central School Study and by the Metropolitan School Study Council, both of which are affiliated with the Institute of Administrative Research of Teachers College, Columbia University. The organization held regional training sessions on the use of the observation schedule and, at these sessions, arranged for an interchange of observer teams among participant systems.

Some of the systems in the Quality Measurement Project had applied the Growing Edge in 1956 or 1957. Because of the recency of their Growing Edge scores, these systems were not asked to repeat the observation for the Project in 1958. The other systems in the Q. M. P. sample participated in regional training sessions and made their team observations in the spring of 1958. Observations took place in Grades 5, 8, and 11--as has been the continuing practice in the two Councils. Three separate Growing Edge scores were derived for every system, one score each for the elementary level, the junior high school level, and the senior high school level.

Growing Edge scores were secured in 95 of the 97 systems in which intelligence and achievement tests were administered.

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* Sims-Gough-type socio-economic questionnaire

** The attitude-toward-people and attitude-toward-life scale (Pessimism-Tolerance Scale)

*** The semantic-differential scales of attitude toward school subjects.

Processing of Data on Pupils Secured by the Project

Some of the data secured during the first year of the Project are necessarily treated in terms of "aggregates." For example, census data about the adult population in a school district are aggregate measures; and the same holds true of available data on school expenditures and many staff characteristics.

However, the data secured from the intelligence tests and achievement tests, from the attitude schedules, and from rosters listing parental occupation were secured on the individual pupil, whose name was recorded on the tests and rosters or other forms involved. The identity of the individual pupil has been retained in the processing of such data. Each pupil in each grade in each system has been assigned a code number, and all information about any one pupil is collated for him on the same IBM card or deck of IBM cards.

This not inconsiderable clerical and bookkeeping enterprise has been undertaken for two reasons: (1) to insure maximum precision in the classification of pupils and (2) to retain the identity of the individual pupil in projected longitudinal studies over the next several years.

FINDINGS

Range of Achievement across the Sample of Systems

At each of the three grade levels there is a wide range in performance across the sample of systems on composite score for the batteries of achievement tests. In Grade 4, the range is roughly from a mean grade-equivalent of 3.9 to a mean grade-equivalent of about 5.8*. In Grade 7, the range in grade-equivalent scores for systems is roughly from 6.6 to 9**. In Grade 10, the range is from a standard score of 13 to a standard score of 21--a difference of 8 standard scores on a test for which the typical gain from one grade to the other (Grade 9 to Grade 10, for example) is reported to be 2 standard scores***. The ranges of systems in each of the separate tests within the batteries are similar in magnitude to the range on composite score.

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* System means were adjusted to the mid-year of Grade 4, when expectancy on the published norms is a grade-equivalent of 4.5.

** Systems means were adjusted to mid-year of Grade 7, when expectancy on the published norms is a grade-equivalent of 7.5.

*** Iowa Tests of Educational Development, Manual for the School Administrator. Chicago: Science Research Associates, 1957.

The distribution of Systems scores for composite battery are reported on Table 2. The distribution of systems scores on the separate tests in the battery used in Grade 4 and in Grade 7 are reported on Tables 3 to 7, and the separate tests scores for Grade 10 are reported on Tables 8 to 16. In these Tables, systems scores are reported for systems grouped into ten categories for reasons detailed on pages 33 to 34 below, but the tables are useful for reflecting the total range of systems scores across the sample.

On all these tables, it should be noted, the systems are classified according to both community-type and general socio-economic index for community. There are four community types: urban-centered, village-centered, rural-centered, and large cities. There are five steps on the scale of socio-economic index for community, numbered from 1 to 5 with Number 1 being the highest level. A broken horizontal line indicates the mean score for the indicated group of systems on the test reported in each table.

The ranges of systems scores reported on Tables 2 through 16 are an arresting fact. If an individual child achieves two or more grade-equivalents below the level of his typical grade-mates, he is usually singled out for careful study and assistance. Here, systems means are found to differ as many as four grade-equivalents on the most basic kinds of pupil outcomes. Since the systems that fall at the low end of the distribution of criterion scores are no doubt operating under local conditions that in some measure explain their outcome levels, the remedy is not entirely in their own hands. From the statewide-perspective, however, these extremes of difference in systems outcomes would seem unsupportable. Any program designed to raise the level of education in a state must seek out and develop special remedies for the systems that are most in need of help.

TABLE 2

Distribution of Mean Composite Achievement Scores for Systems: Iowa Test of Basic Skills, Grades 4 and 7 Iowa Test of Educational Development, Grade 10

GRADE	Average Scores	Communities classified on a 5-step socio-economic scale[11]										
		Urban-centered					Village-centered		Rural-centered		Large cities	Total
		1	2	3	4	5	3	4	3	4		
	(Grade-equiv.)											
	5.55-5.85	2	1			1						4
	5.25-5.55		1	1	1							3
4	4.95-5.25	------	--4--	3	2	1	2	2		1		15
	4.65-4.95	3	5	--6---	--4--	1	--4--	--2--	--3--	4	3	35
	4.35-4.65		1	1	2	--6--	2	5	2	--3--	--7--	29
	4.05-4.35				1	2				2		5
	3.75-4.05					1						1
											Total	92
	(Grade equiv.)											
	8.85-9.15		1									1
	8.55-8.85	3	2									5
7	8.25-8.55	-----	1									1
	7.95-8.25	2	--4--	2			3				1	12
	7.65-7.95		3	--5---	--7--	1	--2--	3	1		4	26
	7.35-7.65			4	2	6	4	--3--	--3--	--3--	---1---	26
	7.05-7.35					--2--	1	1		--3--	2	9
	6.75-7.05					4			1	1	1	7
	6.45-6.75							1				1
											Total	88
	(Standard scores)											
	21	1										1
	20	1	1									2
	19	--2---		1			1			1		5
	18	1	5	1			1	1		1		10
10	17		---3---	3	2	1	2	1	1	2	2	17
	16			--3---	3	4	-----	--3--	1	--2--	2	18
	15			1	2	5	2	3	2	1	2	18
	14					1	1		1	2	4	9
	13				1	1						2
											Total	82

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[11] Systems are here classified into four community types; urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 3

Distribution of Mean Vocabulary Subtest Scores for Systems: Iowa Test of Basic Skills - Grades 4 and 7

Grade	Average grade equivalent scores	Communities classified on a 5-step socio-economic scale[1]										Total
		Urban-centered					Village-centered		Rural centered		Large cities	
		1	2	3	4	5	3	4	3	4		
	5.85-6.15	1										1
	5.55-5.85	1	1			1						3
	5.25-5.55	---	2	1	1							4
4	4.95-5.25		--4--	3	2		2	1	1	1		14
	4.65-4.95	3	5	--4--	--4--	3	--2--	--3--	--1--	2	2	29
	4.35-4.65			2	2	--2--	4	5	3	--3--	--8--	29
	4.05-4.35			1	1	6				3		11
	3.75-4.05									1		1
											Total	92
	9.15-9.45	2	1									3
	8.85-9.15	--2--	3				1					6
	8.55-8.85	1	--2--	2								5
	8.25-8.55		3	3	1		3		1	0	1	12
7	7.95-8.25		1	--5--	--4--	1	--3--	1			3	18
	7.65-7.95			1	3	3	1	3	1	2	--2--	16
	7.35-7.65		1		1	4 -----	2	--3--	--2--	--3--	2	18
	7.05-7.35					2				1	1	4
	6.75-7.05					3			1	1		5
	6.45-6.75							1				1
											Total	88

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[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means or groups of systems.

TABLE 4

Distribution of Mean Arithmetic Subtest Scores for Systems: Iowa Test of Basic Skills, Grades 4 and 7

Grade	Average grade equivalent scores	Communities classified on a 5-step socio-economic scale[1]										Total
		Urban-centered					Village-centered		Rural-centered		Large cities	
		1	2	3	4	5	3	4	3	4		
4	5.85-6.15											0
	5.55-5.85					1						1
	5.25-5.55	1		1								2
	4.95-5.25	--1--	2		1		1	1				6
	4.65-4.95	2	--6--	--5--	--4--	2	1	--4--	2	2	2	30
	4.35-4.65	1	3	4	4	--5--	--5--	4	--3--	--3--	--7--	39
	4.05-4.35		1	1	1	3	1			5	1	13
	3.75-4.05					1						1
											Total	92
7	9.15-9.45											0
	8.85-9.15											0
	8.55-8.85	1										1
	8.25-8.55		2									2
	7.95-8.25	--2--	3									5
	7.65-7.95	2	--5--	4	5	1	3	1			4	25
	7.35-7.65		1	--4--	--2--	4	--5--	--6--	--3--	2	--2--	29
	7.05-7.35			3	2	--3--	2		2	--3--	2	17
	6.75-7.05					4		1		2	1	8
	6.45-6.75					1						1
											Total	88

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[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 5

Distribution of Mean Reading Subtest Scores for Systems: Iowa Test of Basic Skills, Grades 4 and 7

Grade	Average grade equiv. scores	Communities classified on a 5-step socio-economic scale[1]										Total
		Urban-centered					Village-centered		Rural-centered		Large cities	
		1	2	3	4	5	3	4	3	4		
4	5.85-6.15	2										2
	5.55-5.85		2			1						3
	5.25-5.55	----	3	2	1	1	1	1				9
	4.95-5.25	1	--6--	2	4		3	1		3	1	21
	4.65-4.95	2	1	--6--	--3--	1	--2--	--2--	--4--	3	4	28
	4.35-4.65				1	--5--	2	5	1	----- 1	---- 4	19
	4.05-4.35			1	1	3				3	1	9
	3.75-4.05					1						1
											Total	92
7	9.15-9.45											0
	8.85-9.15											0
	8.55-8.85	--3--	4				1				1	9
	8.25-8.55	1	1 -----	1								3
	7.95-8.25	1	3	1			2					7
	7.65-7.95		3	--6--	3	1	--4--	3	1	0	1	22
	7.35-7.65			3	--5--	6	1	--2--	--2--	--3--	--4--	26
	7.05-7.35				1	--2--	2	2		3	2	12
	6.75-7.05					3			2		1	6
	6.45-6.75					1		1		1		3
											Total	88

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 6

Distribution of Mean Language Subtest Scores for Systems: Iowa Test of Basic Skills, Grades 4 and 7

Grade	Average grade equivalent scores	Communities classified on a 5-step socio-economic scale[1]										
		Urban-centered					Village-centered		Rural-centered		Large cities	Total
		1	2	3	4	5	3	4	3	4		
	5.85-6.15	1				1						2
	5.55-5.85	1	1	2	1			1		1		7
	5.25-5.55	-----	5 -------	1	1	1	3	1				12
4	4.95.5.25	2	5	--5--	4	1	--2--	1 -----	2 -----	--4--	2	28
	4.65-4.95	1	1	3	--3--	--4--	3	5	3	3	--6--	32
	4.35-4.65				1	4		1		1	2	9
	4.05-4.35					1				1		2
	3.75-4.05											0
											Total	92
	9.15-9.45											0
	8.85-9.15											0
	8.55-8.85	1	5									6
	8.25-8.55	--3--	--1--	2			2			0	1	9
7	7.95-8.25	1	3	3	3		1 -----	3 -----			1	15
	7.65-7.95		2	--2--	--5--	2	3	2	1	2	--3--	22
	7.35-7.65			3	1	6 -------	3	1	--3--	--2--	2	21
	7.05-7.35			1		3	1	1		1	1	8
	6.75-7.05					1			1	1	1	4
	6.45-6.75					1		1		1		3
											Total	88

---

1 Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 7
Distribution of Mean Work-Study Skills Subtest Scores for Systems: Iowa Tests of Basic Skills, Grades 4 and 7

Grade	Average grade equiv scores	Communities classified on a 5-step socio-economic scale [1]										
		Urban-centered					Village-centered		Rural-centered		Large cities	Total
		1	2	3	4	5	3	4	3	4		
	5.85-6.15											0
	5.55-5.85											0
	5.25-5.55	2	1	3								6
4	4.95-5.25	-----	1	-3---	2	1	1			1		9
	4.65-4.95	3	--6---	4	1	1	3	3	2		3	26
	4.35-4.65		4	1	--5--	--5--	----- 3	------ 4	----- 2	------ 6	----- 5	35
	4.05-4.35				2	4	1	2	1	1	2	13
	3.75-4.05					1				2		3
											Total	92
	9.15-9.45											0
	8.85-9.15											0
	8.55-8.85											0
	8.25-8.55	2	3									5
7	7.95-8.25	--1---	-- 5--	1			1					8
	7.65-7.95	1	2	4	3		3	2			3	18
	7.35-7.65	1		--5--	--4--	6	---- 4	----- 4	3	1	--3--	31
	7.05-7.35		1	1	1	------ 3	2	1	----- 1	--4--	2	16
	6.75-7.05				1	1		1	1	1	1	6
	6.45-6.75					3				1		4
											Total	88

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 8

Distribution of Mean Scores for Systems on the Subtest of Understanding of Basic Social Concepts: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale[1]										Total
	Urban-centered					Village - centered		Rural - centered		Large cities	
	1	2	3	4	5	3	4	3	4		
22											
21											
20	1										1
19	1					1	1				3
18	1	1							2		4
17	2	6	4		1	2	2		3	1	21
16		2	2	5	4	1	3	2	1	6	26
15			2	1	6	2	2		2	1	16
14			1	2		1		3	1	1	9
13					1					1	2
12											
11											
Total											82

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 9

Distribution of Mean Scores for Systems on the Subtest of Background in the Natural Sciences: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale[1]										Total
	Urban-centered					Village-centered		Rural - centered		Large cities	
	1	2	3	4	5	3	4	3	4		
22	1										1
21							1				1
20		1				1			1		3
19	--2--	4	1	2		2					11
18	2	3	6			--2--	1		3		17
17		1	1	2	5	1	--3--	2	--4--	2	21
16			1	3	3	1	3	2	1	4	18
15					1				1	4	6
14					3						3
13				1							1
12											
11											
Total											82

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 10

Distribution of Mean Scores for Systems on the Subtest of Correctness and Appropriateness of Expression: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale [1]										Total
	Urban-centered					Village-		Rural-		Large cities	
	1	2	3	4	5	3	4	3	4		
22											
21		1									1
20	1										1
19	2 -----					1					3
18			1			1			1		3
17	2	--5--	1				1	1	1	1	12
16		3	--3--	3	4	1 -----	2 ----	------	3 ------	1	20
15			4	--4--	-- 4--	2	4	3	2	-- 5---	28
14				1	4	2	1	1	1	2	12
13									1	1	2
Total											82

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 11

Distribution of Mean Scores for Systems on the Subtest of Ability to do Quantitative Thinking: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale[1]										Total
	Urban-centered					Village-centered		Rural-centered		Large cities	
	1	2	3	4	5	3	4	3	4		
22											
21											
20											
19	2										2
18		1				1					2
17	---- 2	2									4
16	1	--2--	2				1		2		8
15		3	1	2		2	2	1	2	2	15
14		1	---- 3	3	4	---- 2	--1--	2	---- 3	1	20
13			3	---- 1	--4--	1	4	---- 1	1	--4--	19
12				1	4	1			1	3	10
11				1				1			2
Total											82

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 12

Distribution of Mean Scores for Systems on the Subtest of Ability to Interpret Reading Materials in the Social Studies: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale[1]										
	Urban-centered					Village-centered		Rural-centered		Large cities	Total
	1	2	3	4	5	3	4	3	4		
22											
21											
20	1	1									2
19	1					1					2
18	--2--	1	1				1		1		6
17		--4--	2	1	1	3	1		3		15
			-----			-----					
16	1	3	4	2	4		1	2	1	5	23
					-----		-----				
15			2	--1--	5	2	3		-----	--2--	15

14				4	1	1	2	2	2	3	15
13					1			1	2		4
12											
11											
Total											82

---

1 Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 13

Distribution of Mean Scores for Systems on the Subtest of Ability to Interpret Reading Materials in the Natural Sciences: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale [1]										Total
	Urban-centered					Village-centered		Rural-centered		Large cities	
	1	2	3	4	5	3	4	3	4		
22											
21											
20	2										2
19	--1--	1	1								3
18	1	1				1			1		4
17	1	--5--	2		1	1	1		1		12
16		2	--3--	3	3	1 ----	3 ----	1	3	2	21
15			2	--4--	2 ----	3	4	2 ----	--1--	3 -------	21
14			1		4	1		1		4	11
13				1					2	1	4
12					2			1	1		4
11											
Total											82

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 14

Distribution of Mean Scores for Systems on the Subtest of Ability to Interpret Literary Materials: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale [1]										
	Urban-centered					Village-centered		Rural-centered		Large cities	Total
	1	2	3	4	5	3	4	3	4		
22											
21											
20	1										1
19											
18	1	1				1					3
17	---- 2	2	1								5
16	1	---- 4	2	1		1		1	1	1	12
15		2	---- 4	3	1	--1--	3		3	2	19
14			1	---- 3	6	1	--3--	1	--2--	3	20
13			1		---- 3	3	2	---- 2	2	------- 3	16
12				1	1			1	1	1	5
11					1						1
Total											82

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 15

Distribution of Mean Scores for Systems on the Subtest of General Vocabulary: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale [1]										
	Urban-centered					Village - centered		Rural - centered		Large cities	Total
	1	2	3	4	5	3	4	3	4		
22											
21	1										1
20	2 ----										2
19	2	1	1								4
18		-7--	2			1					10
17		1	--3--	2		4 -----	1		3	1	15
16			2	-4--	3	1	3 -----	2	1 -----	4 ---	20
15			1	2	— 7--		4	--2--	4	2	22
14					1	1		1	1	2	6
13					1					1	2
12											
11											
Total											82

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

TABLE 16

Distribution of Mean Scores for Systems on the Subtest of Uses of Sources of Information: Iowa Test of Educational Development, Grade 10

Average standard scores	Communities classified on a 5-step socio-economic scale.[1]										
	Urban-centered					Village - centered		Rural - centered		Large cities	Total
	1	2	3	4	5	3	4	3	4		
22											
21		1									1
20	3										3
19	2	3				1	1	1	1		9
18		4	1		1	1					7
17			3	3	1	1	2		3	2	15
16		1	4	1	2	1	2	1		4	16
15				3	4	2	1	2	2	2	16
14			1	1	2	1	1	1	1	2	10
13					2		1		2		5
12											
11											
Total											82

---

[1] Systems are here classified into four community types: urban-centered, village-centered, rural-centered, or large city; and are further classified according to a general socio-economic index for community on a five-step scale, with Step 1 being the highest level.

Note: Broken lines indicate means for groups of systems.

Range of Achievement among Systems in Similar Settings

The distributions of systems scores, when the systems in the sample are classified according to what might be called "institutional potential" or "input" are also of extraordinary significance educationally.

In Tables 2 through 16, systems means on the composite battery scores and on the separate-test scores are reported for systems classified into ten groups, purportedly differing from one another in "institutional potential." As stated earlier in this report, institutional potential is assumed to be a function of characteristics of the community setting and of the adult population that are not subject to control by school administration. A rural district can not be transmuted into an urban district; yet "urbaness" and "ruralness" probably have differential effects upon the nature of the school system. The educational level of the adults of a community also must be related to the kind of system that the community supports. Yet there is little that school administration can do quickly to change the educational level of the adults in the district and to secure thereby a more favorable climate for improvement in the school system. The wealth of the community and the distribution of wage earners into the various categories of occupations and income levels also are factors that affect pupil support for, interest in, and attitude toward the schools. These, too, are factors not within the control of the schools.

The classification of the sample of systems participating in the Quality Measurement Project into socio-economic groups was made in recognition of these facts.

All large cities with population of 50,000, or over, were placed in a separate group. The remainder of the communities were classified as urban, village-centered, or rural. Urban refers here both to small cities with populations of less than 50,000 and to suburban communities within a radius of twenty to thirty miles of a large city or bordering a small city. The residents of urban communities are largely city-employed, and many commute to work. Village-centered refers to a rural area plus a village, with the village dominating the community. Rural refers to districts having a sufficiently large rural population to dominate the activities of the community as a whole.

Differences in the socio-economic levels of the communities, within the community types just identified, were estimated from information on parental occupation. The average occupational level of parents of pupils tested was the measure used to classify districts on the socio-economic dimension. This measure on parents and pupils had to substitute for census data on all adults in the district because, as stated earlier, census tract and school district are not co-terminous. For some village-centered systems and for all rural systems no usable census data were available.

When classified on the bases of community type and socio-economic level, the 97 participating systems fell into ten categories, as follows:

Type of District	Socio-Economic Level	Range of Means of Socio-Economic Indices for Individual Systems, Based upon Survey of Parental Occupations of Grade 7 Pupils*	Number of Systems
Urban	1	1.5 - 2.5	6
Urban	2	2.6 - 3.0	15
Urban	3	3.1 - 3.5	11
Urban	4	3.6 - 4.0	10
Urban	5	4.1 - 5.0	14
Village	3	3.0 - 3.5	8
Village	4	3.6 - 4.0	8
Rural	3	3.0 - 3.5	5
Rural	4	3.6 - 4.0	10
Large Cities	4	3.5 - 4.2	10
		Total	97

There were five urban groups, each differing from the other on the scale of socio-economic level of parents; viz., Urban - 1, Urban - 2, Urban - 3, Urban - 4, and Urban - 5 -- with Urban - 1 being the highest in the socio-economic ordering. There were two village-centered groups; viz., Village-3 and Village-4, the former having socio-economic level equivalent to that of Urban-3 and the latter being equivalent to Urban-4 on the socio-economic scale. There were two rural groups: Rural-3 and Rural-4, equivalent on the socio-economic scale to the corresponding -3's and -4's for the urban and for the village-centered groups. The large cities were grouped together. Their mean socio-economic status was Level-4 on the five-interval scale used by the Project.

As indicated on Table 2, the range of differences within each group of systems is more than one full grade-equivalent in Grade 4 and Grade 7 and is more than 2 grade-equivalents in Grade 10, judged on the basis of mean composite scores on the achievement battery. Consistently, also, the range of scores within each of the ten groups of systems on each of the several subtests is one grade-equivalent or more in Grades 4 and 7 and is two or more grade-equivalents in Grade 10. The distributions of systems scores for each of the subtests on the achievement battery administered in Grades 4 and 7 are reported on Tables 3 to 7; and systems scores on subtests administered in Grade 10 are reported on Tables 8 to 16.

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* Computed by converting parental occupation of each Grade 7 pupil into a socio-economic index and then computing mean socio-economic index for each system. Cf. page 9 for explanation of use of code for socio-economic index.

Both the differences in systems scores within each of the groups of systems and the differences among the ten groups of systems are highly significant statistically. Summaries of the analyses of variance within each of the ten groups for each of the five subtests administered in Grades 4 and 7 and the summary of analyses of variance among the groups are presented in Appendix I*. Withih-variation was computed for individuals within system.

The findings about within-group differences are of considerable moment if there is any merit to the idea that a practicable approach to improvement in the quality of education is in the identification of outcome differences among similar systems. They mean that, in Grades 4 and 7, systems having ostensibly similar community settings differ from one another by a full year and, in some cases, by a year and a half in the teaching of the basic skills; i.e., vocabulary development, language arts, reading, arithmetic, and work study skills. The findings mean, also, that at Grade 10 similar systems are as much as two and a half years apart in pupil outcomes in the areas of basic science concepts; basic natural science concepts; English usage; fundamentals of arithmetic, algebra, and other secondary school mathematics; ability to interpret reading materials in social studies, science, and English literature; general vocabulary development; and use of source materials.

The hypotheses that the school systems in the Quality Measurement Project would vary in outcomes as measured by the achievement tests and that there would be considerable variation among similar systems are clearly confirmed. The range across the sample, at each grade in each skills area tested, is very great-- spanning as much as four grade-equivalents by the time pupils reach Grade 10. There is also considerable range within each group of similar systems, classified on the basis of community type and socio-economic level. The finding about among-group differences in systems achievement scores indicate that, to some extent, quality is associated with community factors over which the schools have little or no control. That is, institutional potential--or the input factor--helps to explain differences among systems grouped according to community type and circumstances.

However, the finding about within-group differences means that variation in process, that is, in what schools in similar settings do with pupils, has demonstrable effect upon pupil outcomes. This is the essential finding--the finding that supports the hope that substantial improvement of education in a state or in the nation can come from programs of quality assessment.

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* To test whether the statistical significance of the among-group analysis of variance was attributable to only one or two atypical groups, additional analyses of variance were computed between the following groups: Urban 1 vs. Urban 2; Urban 2 vs. Urban 3, Urban 4, Village 3 and Village 4 combined; and Urban 5 vs. Urban 3, Urban 4, Village 3 and Village 4, combined. All analyses resulted in highly significant f's. Summaries of these additional analyses are presented in Appendix I.

Variation among Systems in Effectiveness with Different Types of Pupils

Another hypothesis to be tested in the first year of the Project was that school systems may be unevenly effective with different categories of pupils. This hypothesis is, of course, another test of the importance of among-system variation in process, just discussed. It was postulated that, in comparison with other systems a given system may be highly effective with pupils having superior educational potential but relatively ineffective with pupils of lesser talent. Conversely, of course, it may be assumed that a system may be relatively ineffective with its high potential pupils and eminently successful with its low potential pupils, in comparison with what other systems are doing with similar pupils.

In attacking this issue, the Project postulated three levels of pupil potential : 1 - superior, 2 - average, and 3 - below average.

Two indicators of educational potential were available. One was an index of socio-economic status for individual pupils, used on the assumption that the index reflects a complex of parental, familial, and community factors that affect, or are related to, the educability of the pupil. The other indicator of pupil potential was measured IQ.

There is a problem of choice between these two measures of potential that affects not only the issue of assessing possible "unevenness" in systems effectiveness with different types of pupils but also other issues to be discussed in later sections of this report. Each of the two measures was found in a sample of systems participating in the Project to be strongly correlated with composite achievement scores: the correlation between measured IQ and achievement was .76, and correlation between socio-economic index and achievement was .61. Further, socio-economic index and measured IQ correlated .65 with one another.

Thus, either socio-economic status or measured IQ could be used to provide estimates of pupil potential. Since measured IQ is derived from a test that involves processes like those taught in school--computation, arithmetic, vocabulary, to name only the most obvious matters--it may be expected that measured IQ would correlate somewhat more highly with achievement than would socio-economic status. The more striking fact is, however, that socio-economic status, which is not affected by what the schools do, is the strong indicator of potential that it is here demonstrated to be.

the schools do, is the strong indicator of potential that it is here demonstrated to be.

This fact may be important in any assessment of school quality in which it is desired to evaluate outcomes in terms of the kinds of pupil populations involved. Socio-economic status is a crude measure, but it does reflect pupil potential unaffected by schooling. Measured IQ is, by comparison, a highly refined measure; but it reflects prior schooling to some extent.

Either socio-economic index or measured IQ may be used to estimate the educative potential of pupil populations, but the estimate that one provides has different substantive meaning from that provided by the other. It is proposed that, for assessment of school system effectiveness, the socio-economic index, because it is unaffected by prior schooling, may provide the more defensible estimate of pupil potential.

In the analysis of possible "unevenness" in effectiveness of systems with different categories of pupils, both of these measures of educational potential were used to illustrate the differences in findings that can result from using one rather than the other.

On the socio-economic criterion, pupils were classified as high if parental occupation was coded 0, 1, 2, or 3 on the Edwards Scale*; average, if coded 4 or 5, and low if coded 6, 7, or 8.

Each system in the sample of systems was ranked first on the basis of mean achievement of the high socio-economic pupils; second, on the basis of mean achievement of the average socio-economic group; and, third, on the basis of mean achievement of the low socio-economic group.

On measured IQ, also, this same procedure was followed for assigning three ranks to each system--one ranking for the average achievement of its pupils with IQ's between 120 and 150, another ranking for its pupils with IQ's between 100 and 119, and the third ranking for its pupils with IQ's of 99 or lower.

Examples of the results of this ranking procedure are provided on Tables 17 and 18. These tables are for Grade 7 data only. Similar rankings were made on the basis of Grade 4 data, and on the basis of Grade 10 data.

Table 17 reports, for 41** systems, the three-fold rankings for mean composite achievement scores of the three sub-groups of pupils classified according to socio-economic index derived from parental occupation.

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* *Op*. *cit*., p. 9, supra.

* *Op*. *cit*., p. 9, supra.

** At the time this report was prepared, the machine tabulations required for making this three-fold comparison of rankings in Grade 7 were available for 41 of the participating systems.

TABLE 17

Three-fold Rankings of Forty-one School Systems on Basis of Mean Composite Achievement Scores of Grade 7 Pupils Classified into Three Groups According to Socio-Economic Status

Column 1: Ranking of Means of High Socio-Economic Group	Column 2: Ranking of Means of Middle Socio-Economic Group	Column 3: Ranking of Means of Low Socio-Economic Group
1	21	7
2	37	6
3	5	3
4	1	2
5	12	18
6	16	16
7	23	24
8	29	19
9	19	34
10	2	17
11	38	37
12	6	20
13	8	11
14	31	27
15	33	25
16	11	9
17	41	13
18	28	26
19	22	14
20	17	5
21	36	40
22	24	32
23	18	28
24	27	31
25	30	38
26	14	35
27	15	12
28	39	33
29	32	21
30	9	22
31	34	30
32	25	23
33	26	4
34	10	10
35	35	36
36	4	1
37	20	29
38	7	15
39	40	41
40	3	39
41	13	8

Column 1 of Table 17 may be used to identify systems in making comparisons between rankings of systems on performance of their pupils of high socio-economic group and rankings of the same systems on performance of their middle socio-economic groups (Column 2) and their low socio-economic groups (Column 3). In Column 1 of Table 17, systems are ranked in order from 1 (highest rank) to 41 (lowest rank) for the mean performance of the pupils in the high socio-economic group of each of these systems.

The broken horizontal lines roughly divide the first column into quartiles, and they also indicate where the quartiles would fall in the other two columns if the rank order of systems in those two columns were the same as in Column 1.

The general picture is one of "unevenness" in the relative effectiveness of systems with the three categories of pupils in Grade 7.

Note that the systems which fall into the top quartile (the top ten systems) in Column 1 distribute themselves as follows in Column 2: 3 in the top quartile, 3 in the third quartile, 3 in the second quartile, and 1 in the bottom quartile. Thus, there is wide variation between relative ranks of systems on performance of their high socio-economic groups and their relative ranks on performance of their middle socio-economic groups. Looking across the three columns in Table 17 simultaneously, it is observed that only two of the systems that rank in the top ten on the basis of the performance of their high socio-economic group evidence across-the-board consistency in relative effectiveness, with the three different types of pupils; namely, the systems that have Rank 4 and Rank 5 in Column 1. These two systems rank in the top quartile for all three types of pupils. They are obvious candidates for intensive study to ascertain how they achieve this desirable outcome. Among all 41 systems included in Table 17, only three more systems rank consistently in the same quartile in all three columns; namely, the systems that hold Ranks 32, 36, and 40 in Column 1. "Unevenness" in greater or lesser degree is characteristic of 36 of the 41 systems.

On Table 18, the three-fold rankings are provided for 51 systems for mean composite score of Grade 7 pupils classified into three groups on the basis of measured IQ. In Column 1 of Table 18, systems have been ranked, in order, from 1 (high) to 51 (low) on the basis of the mean composite achievement score of their pupils having IQ's ranging from 120 to 150. The broken horizontal lines divide the quartiles, as on Table 17.

It will be observed that when pupils are classified according to IQ, the systems which rank in the top quartile in Column 1 (that is, rank 1 through 12 on the basis of the performance of their pupils with measured IQ's between 120 and 150) appear to tend toward consistency in relative effectiveness with the pupils scoring IQ's between 100 and 119 and with the pupils scoring IQ's of 99 or lower. Six (6) of the top twelve systems rank in the top quartile in all three columns. The fact remains, however, that there still is considerable variation in effectiveness with different types of pupils among the same 12 systems ranking in the top quartile of Column 1. The system that ranks at the top (Rank 1) for its pupils who are college material (the pupils with 120 to 150 IQ) ranks, for example, 31st and 36th for its other two groups of pupils. Three other systems that do rather well for their college material are also apparently doing inferior jobs with other categories of pupils; namely, the systems that in Column 1 rank 4, 11, 12, and which are observed to rank 46, 49, and 50, respectively, for

TABLE 18

Three-fold Rankings of Fifty-one School Systems on Basis of Mean Composite Achievement Scores of Grade 7 Pupils Classified into Three Groups According to IQ

Column 1: Ranking of Means of Pupils with 120 to 150 IQ	Column 2: Ranking of Means of Pupils with 100 to 119 IQ	Column 3: Ranking of Means of Pupils with IQ of 99 or less
1	31	36
2	9	2
3	3	17
4	5	46
5	14	6
6	2	3
7	12	5
8	11	29
9	8	30
10	1	1
11	38	49
12	15	50
13	21	16
14	19	9
15	4	4
16	47	22
17	6	21
18	48	34
19	23	19
20	50	37
21	24	32
22	10	24
23	16	8
24	42	51
25	13	28
26	18	10
27	49	38
28	17	14
29	33	47
30	28	40
31	25	20
32	27	13
33	7	18
34	36	7
35	35	33
36	41	41
37	32	15
38	30	23
39	29	31
40	22	11
41	20	25
42	44	44
43	43	39
44	39	35
45	40	43
46	26	26
47	51	48
48	46	45
49	37	12
50	34	27
51	45	42

their pupils with IQ's of 99 or lower. Of the 39 systems that rank in the third, second, and first (bottom) quartiles in Column 1, only 9 rank in the same quartile for relative effectiveness with all three different categories of pupils; namely, the systems that in Column 1 rank 13, 19, 34, 39, 42, 45, 47, 48, and 51. Each of the other 30 systems is unevenly effective with the different categories of pupils, relative to what the other systems do with the same categories of pupils.

"Unevenness" is not, of course, necessarily an undesirable thing. On the contrary, it is a hopeful sign that most systems which do not do well with one category of pupils tend to do relatively better with other categories of pupils. Fortunately, only a few systems seem to be ineffective with all three types of pupils. This means that models for effectiveness with all types of pupils exist somewhere in the array of systems participating in the Project. Further research should be directed toward discovering what factors in the learning situation make for effectiveness with different types of pupils, whether pupils are classified on the basis of socio-economic circumstance, measured IQ, personality characteristics, or other background factors.

Generalized estimates of the degree of consistency of rankings from one column to the other column in Tables 17 and 18 are provided by co-efficients of concordance and by mean correlations among rankings. In securing a co-efficient of concordance, the systems are treated, in effect, as if they were individuals who had been ranked by three different judges; and the W[*] is a measure of how much concordance there was among the three judgments. In the case of the three rankings of systems on the basis of test performance of the three groups of Grade 7 pupils classified according to socio-economic status, the W was found to be .50. Perfect concordance would have resulted in a W of 1.00; hence the observed W is low. The W of .50 corresponds to a mean correlation of .26 among the three rankings, this being the average of the correlations between Column 1 and Column 2, Column 2 and Column 3, and Column 1 and Column 3[**]. This more familiar correlational statistic dramatically generalizes the "unevenness" of the relative effectiveness of systems with the different types of Grade 7 pupils classified according to socio-economic status.

The corresponding W and mean r among the three columns of rankings reported in Table 18, in which pupils have been classified according to measured IQ, are .67 and .52 respectively.

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[*] W = symbol for co-efficient of concordance

[**] $\bar{r} = \frac{r_{H \cdot A} + r_{H \cdot L} + r_{A \cdot L}}{3}$, in which :

H = systems rankings for mean achievement of high-potential pupils ;
A = systems rankings for mean achievement of average-potential pupils; and
L = systems rankings for mean achievement of low-potential pupils.

As stated, this three-fold ranking of systems was made at Grade 4 and at Grade 10, just as at Grade 7, both for pupils classified into three groups according to socio-economic status and for pupils classified into three groups according to measured IQ. Again on the assumption that both of these criteria for grouping reflect pupil educative potential, co-efficients of concordance and mean correlations among rankings were computed, as for the Grade 7 data just reviewed in detail. There follows a summary of all the W's and mean r's computed for the data of Grades 4, 7, and 10, first for pupils classified on socio-economic index and second for pupils classified on measured IQ.

I. Using socio-economic status as the indicator of pupil potential:

		Grade 4	Grade 7	Grade 10
W*	=	.75	.50	.57
$\bar{r}$	=	.63	.26	.36

II. Using intelligence scores as the indicator of pupil potential:

W*	=	.81	.67	.67
$\bar{r}$	=	.73	.52	.52

In the early grades, school systems appear to be fairly uniform in their effectiveness with the different types of pupils. That is, a system that ranks relatively high, as compared with other systems, in effectiveness with young pupils of strong educative potential, tends also to rank high in effectiveness with its pupils of average and of relatively low educative potential. This tendency is apparent, whether the potential of the pupil-populations in systems is estimated on the basis of a socio-economic index or on the basis of measured IQ. The coefficient of concordance is .75 for the multiple rankings of systems when socio-economic index is used to classify pupils into three categories differing from one another in terms of educative potential; and the coefficient of concordance is .81 when pupils are classified on the basis of measured IQ. The corresponding mean correlation coefficients among the three rankings are .63 when pupils are classified on the socio-economic index, and .73 when pupils are classified according to measured IQ. Of course, these correlations indicate that, even though there is a tendency in the early grades toward consistency in systems in effectiveness with different categories of pupils, there is still considerable variation in effectiveness.

In the secondary level, there is a dramatic demonstration of "unevenness" in systems effectiveness with different categories of pupils, already partly revealed in the discussion of the illustrative material summarized in Tables 18 and 19. This "unevenness" is manifest whether the basis for classifying pupil educative - potential is a socio-economic index or measured IQ. When pupils are classified according to measured IQ, the coefficients of concordance are .67 and the mean r's among rankings are .52 in both Grades 7 and 10. When pupils are classified according to socio-economic index, however, the coefficients of concordance drop to .50 and .57 in Grade 7 and Grade 10, respectively; and the mean r's among rankings fall to .26 and .36, respectively.

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* All the W's are significantly different from zero.

Two queries are raised by these data: (1) why are the W's and mean r's higher when measured IQ is used as the basis for dividing pupil populations in categories differing in educational potential, and (2) what do the low W's and mean r's in Grades 7 and 10, whether derived after pupils are classified on socio-economic status or on measured IQ, signify?

One reason that systems are discovered to be doing a slightly more consistent job with different types of pupils classified on measured IQ is that measured IQ includes, as stated before, some element of an achievement score. Pupils are thus, to some extent, classified on achievement and then their inter-group performance is later compared on achievement. In this process, the overlap between a group intelligence test and an achievement test is sufficient to account, at least in part, for some of the among-rankings consistency reflected in obtained W's and mean r's. Since the socio-economic index has no such overlap with an achievement test, it can not have this same effect when used to classify pupils.

The low W's and the correspondingly low mean r's among rankings in the secondary grades signify that the typical system is not uniformly effective in capitalizing the educative potential, or in meeting the educational needs, of all categories in its pupils.

This finding means, of course, that systems scores based upon the mean performance of all their pupils when used to compare the effectiveness (or quality) of systems provide only a starting point in quality assessment. The simple mean is affected both by the performance of one category of pupils as compared with the performance of other categories and by the relative proportion of the total pupil-population that each category represents. For example, a system having 85% high talent pupils, 10% average-talent, and 5% low-talent is different from a system having 20% high, 65% average, and 15% low. The former system may far outstrip the latter on the basis of mean pupil achievement. Yet the latter may be doing, relatively speaking, a far more effective job with average-talent and low-talent pupils than the former. Quality assessment must go beyond the study of variation in average performance among systems into the study of variation among systems in effectiveness with different types of pupils.

The findings make obvious the fact that the typical American school system has not yet become facile in meeting, simultaneously, the educational needs of different socio-economic classes in our society. The above-reported low W's and mean r's that result when pupils are classified according to socio-economic status are the evidence here. This is a fact that warrants special attention, quite apart from the issue of whether socio-economic index or a verbal group intelligence test is an appropriate measure of educative potential. The mean r's reported above for Grade 7 and Grade 10 when pupils are classified according to socio-economic status mean that, in general, a system which is doing very well for its pupils of high socio-economic level is not very likely to be doing equally well, relative to what other systems are doing, for its pupils of average or low socio-economic status. Conversely, it means that a system which may be doing relatively poorly for its pupils of high socio-economic status may, in effect, be a potential model system for demonstrating how to do very well with pupils of average or of low socio-economic status. It would appear that one avenue to raising the general level of education in a State would be in the search for factors related to this sort of differential success among systems with different socio-economic groups.

From another line of evidence -- a study of correlations between pupil achievement and selected administrative variables -- it must be inferred that the need for inventiveness in program-development is greater in dealing with pupil-groups of average and of low socio-economic status than in dealing with pupil-groups of high socio-economic status.

In a later section of this report, there is a summary of studies of correlations between achievement scores and selected factors that are within the control of school administrators, like the use of available funds and the characteristics of school staffs.

Two of the correlational analyses are particularly pertinent at this point; namely, the correlation between average composite achievement scores of the three different socio-economic categories of pupils in Grade 7 and expenditure for instruction and the correlation between the sub-group achievement scores and level of training of teaching staff.* It was found that per-pupil expenditure is correlated positively with the achievement of the high-level group: there is a .32 correlation here, significant at the .05-level. However, per-pupil expenditure for instructional purposes had only a .04 correlation with performance of groups of average socio-economic status, and has a -.14 correlation with the performance of groups of low socio-economic status. Correlations of similar magnitude were found to exist between level of professional preparation of staff and achievement of the three different socio-economic groups: .36 with that of the high groups; .07 with that of the average groups; and -.18 with that of the low groups. (Level of preparation here was measured in terms of percentage of teachers in a system having five or more years of training.)

These correlations suggest that systems spending the more money on instruction and having the more highly trained staffs are better able to put these resources to good account for their pupils of high socio-economic status than for their less favored groups of pupils. In fact, increased resources for education, may, it would seem, be used in some systems for the benefit of the pupils of higher socio-economic status at the expense, educationally, of pupils of lower socio-economic status.

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* The figure used for per-pupil expenditure was that reported by system for all pupils--elementary and secondary, combined. Similarly, the per cent of staff with five or more years of training was for entire staff at all grade levels.

Perhaps when staff is oriented to the goals held in the community for pupils of higher socio-economic status, the needs of pupils of lower socio-economic status are inadequately attended.

To recapitulate the findings about consistency vs. unevenness in effectiveness with different groups of pupils, classified according to educative potential, it is found that, in the early grades, systems tend toward consistency. By the end of the elementary period -- in Grade 7 -- the general rule is for a system to be uneven in its effectiveness. This unevenness persists through the secondary period. Thus, in the early grades, a system that is highly effective with its more favored socio-economic group of pupils is also likely to be highly effective with its average and low socio-economic groups. By the end of the intermediate grades, however, a system that is highly effective with one socio-economic group of pupils is likely not to be equally effective with groups of pupils of different socio-economic status. Further, there is evidence that school systems which expend the greater sums for instruction and assemble the more highly trained staffs tend to use these assets more for the benefit of the high socio-economic group of pupils than for the benefit of pupil-groups of average and of low socio-economic status.

In these findings there is compelling additional evidence that what systems do with pupils has an effect upon outcomes and that the factor of pupil-potential does not explain away all among-system differences in apparent effectiveness. Inconsistency in effectiveness with different types of pupils in the same system must be program-related. A great stride toward improvement in the quality of education in a State could very well be taken by identifying and studying schools that are models of effectiveness with different types of pupils and making available to all systems findings about what makes for their superior performance.

Regression and Residual Analyses

It has already been explained that the sample of participating school systems was divided into ten categories on the basis of community type because it was believed that the search for clues to improvement in the quality of education might best begin with comparisons of outcomes among similar systems. In effect, general expectancy levels of achievement were implied in these groupings; that is, it was implied that a system can properly be expected to maintain a level of outcome that systems are achieving.

However, even within groups of similar systems there was variation in the measures used to estimate institutional potential. All of the systems classified as Urban-1, for example, did not have identical scores for socio-economic level. Because of this fact, a more detailed specification of expectancy might well be sought for individual systems.

For this purpose, regression equations were computed, using separately and in combination the two indicators of potential available to the Project; namely, socio-economic status and measured IQ. Interest was directed upon the issues of: (1) whether significant predictions could be made, (2) whether the different available predictors had different predictive value, and (3) what the pattern of residuals was for the different categories of systems. In this last regard, there was special interest in whether the regression equations would give one or another group of systems the appearance of being either generally more effective or less effective than their institutional potential seemed to warrant.

In one regression, mean socio-economic level of the system was used as th only predictor. In another regression, mean measured IQ for the system was us as the predictor. In the third regression, socio-economic level and measured IQ combined, were used as the predictors. The regression equations* are summarized here:

Using socio-economic level only as predictor: Predicted Achievement) = Constant of 9.7360 — (4.540 x Soc-Econ Level)

Using measured IQ only as predictor: Predicted Achievement) = Constant of 7.2961 + (.7718 x Ave. IQ)

Using both socio-economic level and measured IQ as the predictors: Predicted Achievement) Constant of 12.0066 + (.6412 x Ave. IQ) — (1.4686 x Soc-Econ Level)

All three regressions coefficients were found to be statistically significant beyond the .01-level of confidence **. That is, a significantly better than chance prediction for system achievement can be made using either socio-economic index or measured IQ, singly, or both in combination, as the predictors.

Table 19 reports differences between predicted and actual composite achievement scores for systems at Grade 7 when socio-economic index alone is used as the predictor. Table 20 reports differences when measured IQ only is used as the predictor. Table 21 reports the differences when socio-economic index and measured IQ are used as predictors in the two-variable regression. Residuals are reported as grade-equivalent scores in all three tables.

It is interesting to note on Table 19 that the residuals of 4 of the 5 urban systems having the highest socio-economic index (Urban-1 group) are positive (above expectancy), and that the residuals for 8 of the 11 systems in the Urban-2 group are also positive. Thus, expectancy is exceeded by 12 of the 16 systems serving the communities which are at the high end of the socio-economic distribution of systems participating in the QMP and for which expectancy is higher than for all other systems in the sample. Conversely, the residuals are negative for 6 of the 13 Urban-5 systems, for which expectancy is set lowest of all the systems in the sample. The same detail is observed in Tables 20 and 21. In Table 20, which reports residuals for the prediction based on measured IQ, only 2 of the 16 residuals for the highest expectancy systems are negative; but 7 of the 13

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* For data secured in Grade 7, for all three regression equations.

** The analyses of regression are reported in Appendix J.

TABLE 19

Differences between Predicted and Actual Composite Achievement Scores in Grade 7, Using as the Predictor Variable Mean Socio-Economic Index of Grade 7 Pupils in Each System: Differences Reported as Grade-Equivalent Scores

Code for system in each group	Communities classified on a 5-step socio-economic scale									
	Urban					Village		Rural		Large Cities
	1	2	3	4	5	3	4	3	4	4
A	-.10	-.15	-.25	.16	.39	.01	-.10	-.96	-.18	.05
B	.57	-.11	-.07	.26	-.34	.02	.17	-.22	-.15	.02
C	.31	.14	-.07	-.01	-.10	-.06	.30	-.13	.03	.37
D	.06	-.11	-.16	.32	-.38	.16	.29	.39	-.74	.22
E	.31	.07	.03	.24	-.56	-.55	-.72	-.27	-.14	-.65
F		.01	.25	.32	-.21	.39	-.19		-.42	-.07
G		.25	-.02	.36	.21	-.32	-.27		-.28	-.20
H		.76	-.28	-.07	.19	.55	-.17			.54
I		.98	.26	-.19	.17	.09				.19
J		.35	.37		.02	.27				
K		.52	.53		.17					
L					-.17					
M					.11					
Mean residual for group	.23	.25	.05	.15	-.04	-.02	-.09	-.24	-.27	.02

Note: Urban-1 designates the group of systems having highest socio-economic level; Urban-2, the next highest; Urban-3, Urban-4, and Urban-5 designate groups of successively less favored on a scale of socio-economic status of community setting. Village-3 and Rural-3 correspond to the socio-economic level of Urban-3. Village-4, Rural-4, and Large City-4 correspond to socio-economic level of Urban-4.

Note: The letter-designation "A" refers to the first system in each group for which a residual is reported; i.e., System Urban 1-A, System Urban 2-A, System Urban 3-A, and so on tr Large City System A. The other letter-designations are similarly used in their respective rows. In Tables 7 and 8, any given letter designation (like 1A or 2A) refers to the same system as on Table 6.

TABLE 20

Differences between Predicted and Actual Composite Achievement Scores in Grade 7, Using as the Predictor Variable Mean IQ of Grade 7 Pupils in Each System: Differences Reported as Grade-Equivalent Scores

Code for system in each group	Communities classified on a 5-step socio-economic scale									
	Urban					Village		Rural		Large Cities
	1	2	3	4	5	3	4	3	4	4
A	.02	-.27	-.28	.14	-.10	-.20	.10	-.54	.08	.36
B	.03	-.02	-.12	.19	-.43	.09	.27	-.22	-.17	.08
C	.37	.18	-.32	-.09	.16	-.23	.03	.10	.49	.10
D	.26	.02	-.23	.32	-.03	.31	-.03	-.22	-.22	.19
E	.36	.29	-.05	.02	-.73	.09	-.50	-.53	.00	-.19
F		.21	-.06	.02	-.48	-.14	.14		-.18	-.24
G		.22	-.29	.06	-.28	-.50	-.07		.00	-.31
H		.22	-.31	.14	.14	.28	-.12			.01
I		.51	.33	-.28	.08	.27				.26
J		.23	.32		-.07	.22				
K		.54	.53		.16					
L					.52					
M					-.01					
Mean Residual for group	.21	.19	-.04	.06	-.08	.02	-.11	-.28	.00	-.03

Note: Urban-1 designates the group of systems having highest socio-economic level; Urban-2, the next highest; Urban-3, Urban-4, and Urban-5 designate groups of successively less favored on a scale of socio-economic status of community setting. Village-3 and Rural-3 correspond to the socio-economic level of Urban-3. Village-4, Rural-4, and Large City-4 correspond to socio-economic level of Urban-4.

Note: The letter-designation "A" refers to the first system in each group for which a residual is reported; i.e., System Urban-1A, System Urban-2A, System Urban-3A, and so on to Large City System A. The other letter designations are similarly used in their respective rows. These letter designations are the same for any given system on Tables 6 and 8.

TABLE 21

Differences between Predicted and Actual Composite Achievement Scores in Grade 7, Using as the Predictor Variables Both Socio-Economic Index and IQ of Grade 7 Pupils in Each System: Differences Reported as Grade-Equivalent Scores

Code for system in each group	Communities classified on a 5-step socio-economic scale									
	Urban					Village		Rural		Large Cities
	1	2	3	4	5	3	4	3	4	4
A	-.09	-.30	-.28	.15	.04	-.16	.06	-.65	.03	.30
B	.11	-.09	-.12	.21	-.37	.07	.26	-.23	-.16	.08
C	.25	.12	-.30	-.08	.20	-.24	.11	.06	.44	.18
D	.10	-.09	-.23	.37	-.02	.31	.03	-.10	-.29	.22
E	.22	.17	-.04	-.10	-.66	-.05	-.50	-.50	-.01	-.27
F		.12	-.01	.07	-.40	-.22	.08		-.20	-.17
G		.17	-.29	.14	-.11	-.49	-.11		-.02	-.27
H		.30	-.35	.22	.19	.36	-.10			.68
I		.59	.31	-.26	.14	.21				.24
J		.17	.32		-.01	.19				
K		.47	.43		.20					
L					.41					
M					.04					
Mean residual for group	.12	.14	-.05	.08	-.03	.00	-.02	-.28	-.03	.11

Note: Urban-1 designates the group of systems having highest socio-economic level; Urban-2, the next highest; Urban-3, Urban-4, and Urban 5 designate groups of successively less favored on a scale of socio-economic status of community setting. Village-3 and Rural-3 correspond to the socio-economic level of Urban-3. Village-4, Rural-4, and Large City-4 correspond to socio-economic level of Urban-4.

Note: The letter-designation "A" refers to the first system in each group for which a residual is reported; i.e., System Urban-1A, System Urban-2A, System Urban-3A, and so on to Large City System A. The other letter-designations are similarly used in other respective rows. These letter designations are the same for any given system in Tables 6 and 7.

residuals for the lowest-expectancy are negative. In Table 21, the general picture for these three extreme groups is the same as that reported for Table 19.

Turning to an examination of the residuals for individual systems in groups other than those in the three extreme groups (Urban-1, Urban-2, and Urban-5), it is observed on Tables 19, 20, and 21, that the rural systems do not achieve expectancy, whether expectancy is predicted from socio-economic index alone, measured IQ alone, or both socio-economic index and measured IQ combined. Note on Table 19 that 9 of the 12 rural systems (Rural-3 and Rural-4 groups, combined) fail to achieve expectancy, predicted from socio-economic index. It might be suggested that perhaps the measure of socio-economic status used in the study acts prejudicially in rural areas; but, even if this were true, there is additional evidence in Table 20 that rural systems, in general, have difficulty achieving acceptable pupil outcome levels. Residuals are negative for 8 of the 12 systems in the Rural-1 and Rural-2 groups when measured IQ alone is used as the predictor. The data on Table 21, in which are reported residuals from prediction for the two-variable regression, present the same picture as Table 20 for the rural systems.

The residuals for individual village systems present a pattern consistent with the findings about residuals that have already been reviewed. When expectancy is predicted from socio-economic index (see Table 19), the Village-3 systems are observed to have a slightly stronger tendency to achieve or exceed expectancy than do the Village-4 systems. Only 3 of the 10 Village-4 systems fail to achieve expectancy, while 5 of the 8 Village-4 systems have negative residuals, even though expectancy is lower for them than for the Village-3 systems. When measured IQ is used as the only predictor, the two village groups achieve more nearly like one another as regards expectancy (Table 20); and when both socio-economic index and measured IQ are combined in the prediction, the tendency of both village groups to achieve expectancy in about equal measure is apparently increased.

It is appropriate in connection with this discussion of residuals for village-centered systems to point out that when measured IQ, rather than socio-economic index, is used as the predictor, the accuracy of prediction is inevitably increased. The overlap between intelligence test content and achievement test content is, in part, the cause. The intelligence test score, as earlier pointed out, in part reflects what schools have already done for pupils in the areas of reading, computation, vocabulary development, and the like. The battery of achievement tests used by the Project measures these same functions. Hence, when intelligence test scores are used to set expectancy for achievement test scores, prediction is assured some degree of accuracy.

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* The mean residuals among groups reported on Table 19 were found by analyses of variance to be significantly different.

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This fact is important in quality assessment of school systems. There is a difference in meaning of prediction based upon socio-economic index for system as contrasted with prediction based upon mean measured IQ for system. If socio-economic index is accepted to be a good reflector of parental and community influences on the educability of pupils, it can be interpreted to be a "purer" measure of "input" into systems than measured IQ. Measured IQ provides an estimate of pupil potential that reflects both this "purer input" factor and the accumulation of school influences up to the date of the administration of the intelligence test. This latter measure is no doubt operationally useful if it is desired to estimate what a group of Grade 7 pupils, say, might be expected to achieve in Grade 8. However, if it is desired to compare system with system in order to arrive at meaningful quality assessment, it would seem desirable to use a more nearly "pure" measure of "input"--meaning by this term, of course, the educative potential of the pupils.

The question naturally arises as to what the relationship is between an administrative factor like available funds for instruction, on the one hand, and differences between expectancy for systems and actual achievement of systems, on the other hand. To answer this question, the correlation was computed between expenditure for instruction and residuals--that is, between expenditure and the difference between actual and expected outcome of a system on composite achievement score on Grade 7, using socio-economic index as the predictor. The correlation was .27, which is statistically significant at the .05 level. Thus, there is a positive relationship between expenditure for instruction and the likelihood that a system will achieve, exceed, or fail to achieve the level of pupil outcomes that may be expected of the system, given its socio-economic setting. The correlation is not high enough to indicate that the mere expenditure of additional funds will, per se, guarantee this desirable outcome. The data gave reason to conclude, however, that there are no bargains to be had in financing education if it is desired fully to capitalize the institutional potential of any school system. The systems that spend the more tend to be the more likely to achieve or to exceed expectancy.

On Table 22, which summarizes the first-year correlational analyses of the Project, it is indicated that the product-moment correlation between expenditure for instruction and achievement in Grade 7 is .51 when no adjustment is made for differences in the socio-economic setting of the districts; and on Table 23 it is reported that the correlation between expenditure and achievement scores for systems is .31 when socio-economic status is partialled out. It has just been reported in this section, that the correlation between expenditure and systems outcomes still is significantly positive when only the difference between predicted and actual achievement is used as the measure of pupil outcome for system. These consistently positive correlations are obvious documentation of an abiding relationship between expenditure and system effectiveness--or quality, if one will--in achieving the skills outcomes. The size of correlations suggests that the educational benefits of additional funds are not automatic. However, they leave no doubt that better systems outcomes are related to additional expenditure, judiciously administered.

Intercorrelation of Variables

During the first year of the Project, data were secured for individual pupils, across the sample of systems, on socio-economic status, measured IQ, and achievement in a number of skill areas. In addition, there was available, by system, information about staff characteristics and level of financial effort. Also, descriptive information about school practices was secured in the participating systems through observational survey.

It was expected that pupil background factors and pupil achievement would be related. It was also expected that factors of cost and of staff characteristics would be related and that these, in turn, would be related to school practices, at least to the extent that practices involve factors of cost--like provisions for special staff, for example. It was hypothesized, moreover, that there would be a relationship between achievement and factors that are within the control of school administration, like expenditure, staff characteristics, and school practices.

This latter point is of major concern in the Project. It is important, of course, to establish that school systems are differentially effective even when adjustment is made for differences in systems and pupil potential. It is equally important, however, to identify program or administrative variables that are related to system effectiveness.

Two relationships of this sort have already been reviewed: i.e., (1) the relationships between, on the one hand, expenditure for instruction and percent of teachers with five or more years of training and, on the other hand, achievement of pupils divided into three categories on the basis of educative potential (pp. 42 to 43, above) and (2) the relationship between expenditure and residuals for achievement, just discussed above (p. 49).

Additional details on intercorrelations computed thus far are reflected in Table 22, where product-moment intercorrelations are presented for eleven selected variables: (1) Socio-economic level of parents of Grade 7 pupils; (2) I. Q. of Grade 7 pupils; (3) Reading achievement of Grade 4 pupils; (4) Reading achivement of Grade 7 pupils; (5) Composite achievement of Grade 4 pupils; (6) Composite achievement of Grade 7 pupils; (7) School practices in elementary grade (Growing Edge scores, elementary form); (8) School practices in junior high school (Growing Edge scores, junior high form); (9) Per-pupil expenditure for instructional purposes; (10) Special staff per 1000 students; and (11) Percent teachers with more than five years training.

These are, it is emphasized, a sampling of the variables whose intercorrelations it is intended to study. The already-accomplished intercorrelations to which reference is made in this report are thus only illustrative of the potential value of the data secured during the first year of the Project for gaining insights about the interrelationships among systems input, processes, and outcomes.

TABLE 22

Product-Moment Intercorrelations of Selected Variables for Eighty-eight School Systems

Variables	Gr. 7 Socio-Econ. Level	Gr.7 I.Q.	Gr.4 Reading	Gr.7 Reading	Gr. 4 Composite Achievement	Gr. 7 Composite Achievement	Elem. Growing Edge Score	Jr.H.S. Growing Edge Score	Per Pupil Costs	Special Staff per1000 Pupils	Percent of Teachers with 5 or More Years Training
	1	2	3	4	5	6	7	8	9[a]	10	11
1. Socio-economic Level of Parents of Gr.7 Pupils	--	.65	.46	.54	.44	.61	.22	.11	.49	.24	.51
2. IQ of Gr.7 Pupils		--	.59	.65	.64	.76	.28	.23	.52	.21	.53
3. Reading Achievement of Gr. 4 Pupils			--	.55	.88	.58	.17	.12	.25	.09	.29
4. Reading Achievement of Gr. 7 Pupils				--	.60	.91	.23	.26	.48	.21	.53
5. Composite Achievement of Gr. 4 Pupils					--	.69	.21	.14	.34	.02	.39
6. Composite Achievement of Gr. 7 Pupils						--	.30	.24	.51	.24	.56
7. School Practices in Elem. Grade (Growing Edge Scores; Elem. Form)							--	.30	.38	.13	.34
8 School Practices in Jr. HS. (Growing Edge Scores; Jr. High Form)								--	.40	.23	.24
9. Per pupil Expenditure for Instructional Purposes[a]									--	.51	.85
10. Special Staff per 1000 Students										--	.43
11. Per Cent Teachers with 5 or More Years Training											--

a. Computed on basis of weighted average daily attendance(WADA), in which every secondary school pupil is computed at 1.25 of an elementary school pupil.

It has already been reported, for example (p. 36), that the Grade 7 pupil background factors, socio-economic status and measured IQ, correlate .65 and that achievement in Grade 7 correlates .61 with socio-economic status and .76 with measured IQ. The earlier-discussed tendency of socio-economic status and of measured IQ to perform similarly when used as predictors of system achievement are, of course, reflections of these strong intercorrelations.

The intercorrelations among the Grade 4 and Grade 7 achievement variables reported on Table 22 are of interest because they provide evidence on the issue of whether the same system will tend to present a consistent picture of effectiveness from grade to grade. The evidence is to the contrary, it would seem. The correlation between composite achievement scores for systems in Grade 4 and composite scores in Grade 7 is only .55*. Grade 4 composite achievement is thus not a strong predictor of Grade 7 composite achievement. The correlation between systems reading score in Grade 4 and reading score in Grade 7 is somewhat higher--.69*, but even this correlation would suggest considerable grade to grade variation*.

The correlation of .30 between Grade 4 and Grade 7 "Growing Edge" scores is a matter of interest. The "Growing Edge," it will be recalled, gives credit, among other things, for "real-life" learning situations, provision for individual differences, and special psychological and counseling services. There are two forms of the "Growing Edge," one for use in Grade 5 and another for use in both Grade 8 and Grade 11. The correlation of .30 between systems' "Growing Edge" scores in Grade 5 and scores on the same instrument in Grade 8 suggests either that systems are not consistent from the elementary level to the junior high school level in their basic psychological approach to the pupil, or that the elementary form and the secondary form of the "Growing Edge" measure different school practices. This is an issue warranting further study.

The generally positive relation between per-pupil expenditure for instruction and systems scores for achievement has already been discussed in some detail (see page 49, above). The relationship of cost to staff characteristics also merits attention: the highest correlation reported on Table 22, other than those between total test battery and the separate reading test, is the correlation between expenditure for instruction and percent of teachers in a system who have had five or more years of training. The correlation of .85 indicates that one concomitant of greater expenditure is a better prepared teaching staff. Extra money made available for salaries apparently is not all spent paying the same teachers more money. Rather, it is spent, at least in part, in recruitment of teachers who have additional training and education. Further, the correlations between percent of staff having five or more years of training and Grade 7 achievement (.56 for composite score and .53 for reading score only) indicate that there is a positive relationship between pupil outcomes and the additional training of teachers.

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* To interpret these correlations more fully, it would be necessary to have the correlations between Grade 4 socio-economic status of pupils and Grade 7 socio-economic status of pupils, between Grade 4 mean intelligence scores and Grade 7 mean intelligence scores, and between the Grade 4 and Grade 7 mean scores on all subtests in the achievement battery. The additional correlations would reveal whether pupil-population differences from grade to grade accompany grade to grade differences in outcome measures or whether the differences are related to differential success among systems in the various instructional areas. These additional correlational studies are scheduled to be done and will be reported later.

The correlations of .51 between per-pupil expenditure and ratio of special staff (counselors, psychologists, et al.) to pupils is further evidence that additional expenditure is associated with recruitment of personnel having special qualifications.

Because socio-economic setting of systems had been used to classify systems in the Project and had been found to be strongly correlated with pupil outcomes, it was decided to recompute the intercorrelations among four administrative factors and achievement, partialling out socio-economic index for system. The term "administrative factor" is here used to mean factors that can be controlled by school administration; viz., school practices, as reflected in the "Growing Edge" survey form; expenditure for instruction; ratio of special staff to pupils; and percent of teachers with five or more years of training. The partial correlations are reported in Table 23.

The partial correlations of these administrative factors with systems achievement score are smaller, of course, than the r's reported on Table 22. As reported earlier (p. 49), expenditure for instructional purposes correlates .31 with the systems achievement score, when socio-economic level is partialled out; and the corresponding correlation is .37 for percent of staff with five or more years of training.

Aside from these two correlations, the three highest correlations on Table 22 are between expenditure and special staff per 1000 pupils, between expenditure and percent of teachers with five or more years of training, and between expenditure and school practices as identified in the "Growing Edge" survey instrument. The administrative factors on which data were secured are obviously a cluster centering around the element of cost. This fact is understandable, since there is a cost factor in the development of longer-trained staff and special staff and since some of the observed practices that are given credit-scores in the "Growing Edge" involve special services and special staff.

The importance of the consistently positive relationship between these several administrative factors and systems achievement scores has already been pointed out (p. 49).

TABLE 23

Partial Correlations between Selected Variables, with Socio-economic Level of Community Partialled Out

Variables[15]	Gr. 7 Composite Achievement Score	Jr. H.S. Growing Edge Score	Per Pupil Cost	Special Staff Per 1000 Students	Percent of Teachers with 5 or More Years Training
	6	8	9	10	11
6. Composite Achievement of Grade 7 Pupils	--	.23	.31	.12	.37
8. School Practices in Junior Junior High School (Growing Edge, Junior High Form)		--	.41	.21	.21
9. Per pupil Expenditures for Instructional Purposes			--	.46	.80
10. Special Staff per 1000 Students				--	.36
11. Per Cent Teachers with More than 5 Years Training					--

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[15] The numbers identifying variables correspond to the numbers in Table 9.

Pupil Outcomes Measures vs. Attitude Scores

As indicated on pages 11 to 14 above, a personality inventory and several attitude-interest schedules were administered toward the end of the school year 1957-58 in a subsample of systems participating in the Project. At this time, it is possible to report on exploratory analyses involving two of these inventories, the Teacher Characteristics Schedule and the P-T Scale (the pessimism-tolerance scale) of pupil attitude toward adults and authority. These instruments were administered to test the hypothesis that any among-systems attitude and interest differences reflected by the instruments would prove to be related to differences in pupil outcomes.

The Teacher Characteristics Schedule: This inventory (see Appendix G) was used to explore the issue of whether between-system differences in teacher-preferences and teacher-attitudes are related to systems achievement scores.

To test this issue, data were used from five matched pairs of systems, as indicated on Table 24. These were ten of the sixteen systems that served as a subsample of systems for the try-out administration of the personality and attitude inventories described in the introduction of this report*. Note on Table 24 that there are an Urban 1a system and an Urban 1b system. These are a pair of systems matched on the basis of community type and socio-economic level; that is, both are urban and both, as indicated by the number 1, are classified in the highest socio-economic group (Group 1) of systems, on the five-point scale described earlier **. The other four pairs of systems are identified similarly on Table 24; viz., Urban-2a and Urban-2b, Urban-3a and Urban-3b, Village-4a and Village-4b, and Urban-5a and Urban-5b. The numbers here indicate socio-economic level of system. There is thus representation from all five socio-economic levels provided in the scheme for classifying systems that is used elsewhere in this report.

It will be noted that one member of each of the five pairs of systems had a lower composite achievement score in Grade 7 than did its matching member. On Table 24, the lower-scoring members of all five pairs of systems are grouped above the broken horizontal line, and the higher-scoring members are grouped below the broken line. For each system, there is indicated the mean score for its elementary school teachers on each of the ten scales in the Teacher Characteristics Schedule; viz., (1) Friendly vs. aloof to pupils, (2) Orderly, well-prepared, systematic vs. disorderly and poorly-prepared, (3) Imaginative vs. routine, (4) Favorably vs. unfavorably inclined toward pupils, (5) Favorably vs. unfavorably inclined toward colleagues, (7) Learning-centered vs. child-centered in viewpoint, (8) Superior vs. poor in verbal ability, (9) Stable vs. unstable emotionally, and

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* The other 6 systems did not match into pairs on the basis of community setting.

** See p. 17 above.

Table 24

Differences in Teacher Characteristics for Five Pairs of Systems, Matched on Basis of Community Setting but Differing in Pupil Outcomes

(Outcome Score Being Mean Composite Achievement Score of Grade 7 Pupils)

Group	System	Mean composite achievement score in Grade 7	Average scores for system on the ten scales of the teacher characteristic schedule									
			1 Friendly to pupils vs. aloof	2 Well prepared vs. unsystematic	3 Imaginative vs. routine	4 Favorable toward pupils vs. unfavorable	5 Favorable toward democratic classroom vs. unfavorable	6 Favorable toward colleagues vs. unfavorable	7 Learning centered vs. child centered	8 Superior in verbal ability vs. poor	9 Stable emotionally vs. unstable	10 Select only socially acceptable respons
Lower achieving	Urban -1a	8.6	51.46	31.85	43.00	40.38	28.23	23.46	12.54	28.46	33.00	6.85
	Urban -2a	8.2	46.54	26.26	38.22	32.00	20.61	19.61	14.00	25.28	28.02	8.91
	Urban -3a	7.5	41.38	25.08	36.92	31.54	21.46	19.54	16.08	24.15	27.85	7.62
	Village-4a	7.1	44.06	25.76	34.71	30.76	20.82	19.88	15.29	24.59	24.53	8.59
	Urban -5a	6.8	41.25	25.42	33.34	29.42	19.55	18.43	16.45	22.74	23.55	7.53
Higher achieving	Urban -1b	8.7	44.39	27.66	36.61	31.93	21.23	21.09	14.95	24.41	27.75	8.80
	Urban -2b	8.5	45.67	26.21	26.21	34.54	21.29	20.08	15.17	24.88	28.67	9.83
	Urban -3b	7.6	42.38	24.50	36.88	29.25	20.88	16.25	16.88	23.13	23.25	8.50
	Village-4b	7.5	40.85	25.85	33.31	29.38	19.23	18.69	16.62	23.23	24.15	7.62
	Urban -5b	7.3	40.25	24.46	32.49	28.60	19.50	18.89	17.72	22.92	22.92	7.47
t for significance of difference betw. the two groups			1.84	2.06^{a}	2.09^{a}	1.44	1.46	.60	2.88^{b}	1.33	1.61	1.25

a Significant at 5% level

b Significant at 1% level

Note: The numbers indicate mean socio-economic level of system on a five-point scale with number 1 being the highest level. The pairs of systems are designated by the letters a and b.

(10) Not likely to select only socially acceptable responses vs. likely to do so*.

The question asked of the data reported in Table 24 was whether the teachers in the lower-achieving members of the pairs of systems scored differently on the scales of the Teacher Characteristics Schedule from the teachers in the higher-achieving members of the pairs.

The statistical test applied was the Neyman-Johnson technique for testing the significance of the differences between two samples matched into subgroups on a related trait. In this case, the subgroups are the five higher-achieving systems vs. the five lower-achieving systems, and the matching trait is socio-economic index for system. The resultant t's are reported on the bottom line of Table 24.

The t for the difference between the lower-achieving and the higher-achieving group of systems is significant at the .01-level for Scale 7 (subject-centered vs. child-centered) and the t's are significant at the .05-level between the group for both Scale 2 (well-prepared vs. unsystematic) and Scale 3 (imaginative vs. routine)* The differences between the two groups of systems on the other scales are non-significant.

Higher scores on Scale 7 indicate a tendency for teachers to be more subject-matter oriented and less pupil-centered. Since the higher-achieving systems tend also to achieve higher on Scale 7, it may be concluded that, when systems are closely matched on the basis of community setting, a slight difference between them in staff emphasis upon subject matter will tend to be reflected in somewhat higher pupil-achievement in the skills areas.

In all probability, neither the five higher-achieving systems nor their matching five lower-achieving systems were strongly subject-centered. The possible top score on Scale 7 is 46, and all ten systems scored between 12.54 and 17.72. Published norms for Scale 7 were not available, but it may be surmised that systems scores in this relatively low range represent a general tendency toward child-centeredness rather than toward subject-centeredness. Hence the differences between pairs of systems, which are small in an absolute sense, are mainly differences in degree. It is interesting, however, that these small differences are reflected in differences in pupil achievement. This result evidences, it would seem, the potential profit in studying process-differences for systems that appear to have similar institutional potential and yet achieve different outcome levels.

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* Scale 10 is a measure of test-wiseness and defensiveness in responding to a questionnaire on personal matters.

** In effect, the t's reported in Table 24, as derived, provide a test of the significance of the correlation, corresponding to a point-biserial r, between the identified teacher characteristics and composite achievement score for pupils.

On Scales 2 and 3, higher scores indicate, respectively, a tendency toward careful as contrasted with unsystematic classroom preparation and a tendency toward imaginative as contrasted with routine classroom practice. On these two dimensions the lower-achieving group of systems exceeded the scores of their higher-achieving group of matching systems. It is not warranted to infer that the slightly greater tendency toward careful planning and toward ingenuity in the lower-achieving systems is misspent because these systems do not achieve quite so well in skills tests as do their matching systems that, relatively speaking, emphasize subject matter. Rather, it is more defensible to assume that such staff differences in ingenuity and planning contribute to other outcomes not measured by the instruments used during the first year of the Project. The need, it would seem, is to expand the measures available to the Project to emcompass outcomes beyond those in the basic skills areas in order to be able to test this assumption.

The P-T Scale: It has already been demonstrated that school systems are not consistently effective with pupils classified presumptively according to educative potential. In this connection, further, it has been pointed out that the quality assessment of school systems must not be based solely upon simple means on outcome measures for all pupils in a grade; rather, the assessment must consider what systems are doing with different types of pupils.

In this same framework of thinking, the Project is interested in identifying non-intellective factors in pupil background that are related to pupil outcomes, on the premise that any non-intellective factors found to be related should also be used to classify pupils in assessing system effectiveness in meeting the needs of different types of pupils.

A pilot analysis of data secured on the P-T Scale indicates that there is promise for substantial findings in this area of investigation. The P-T Scale, it will be recalled, secures information on pupil-attitude toward parents, adult authority, and life in general.

Table 25 reports, for this one system, the mean achievement scores of randomly-selected samples of pupils stratified, on the one hand, into three different socio-economic groups and, on the other hand, according to mean P-T Score.

Within each of the three socio-economic groups (High, Average, Low), the mean composite achievement score for the subgroup of pupils having the more positive attitudes toward parents and life is higher than the mean composite achievement score of the subgroup having the more negative attitudes. Among the high socio-economic group, for example, pupils with favorable attitudes achieved, on the average, .6 of a grade-equivalent higher than the pupils with unfavorable attitudes. Among the pupils of average socio-economic status, the mean difference is .9 of a grade equivalent in favor of the pupils with the more positive attitudes toward parents; and among the pupils of lower socio-economic status this difference is .4 of a grade equivalent, also in favor of the more positively inclined pupils.

Thus, the parent-child relationship can be demonstrated to be a factor in pupil achievement*. This tentative finding has implications for any study in which it is desired either to define "input" into systems in terms of pupil characteristics or to classify pupils into categories in terms of educative potential.

TABLE 25

Mean Composite Achievement Scores for Pupils Classified Under Two Groups According to Attitudes Toward Parents and Authority, and into Three Groups According to Socio-Economic Status:

Grade 7 Pupils in One Large School System (Scores reported as Mean Grade-Equivalents)

Socio-Economic level	Attitude toward parents and authority	
	Relatively negative (score of 15 or lower on P-T scale)	Relatively positive (score of 21 or higher on P-T scale)
High	8.6	9.2
Average	7.3	8.2
Low	6.7	7.1
Average for all pupils, disregarding socio-economic level	7.5	8.1

In addition to suggesting this implication, the data in Table 25 reconfirm the usefulness of an index of socio-economic status for classifying pupils according to educative potential. It will be noted that the less favorably inclined subgroup of pupils in the high socio-economic group exceed the mean composite achievement score of the more favorably inclined pupils in the average socio-economic group. Similarly, the less favorably inclined pupils in the average socio-economic group exceed the mean achievement of the more favorably disposed pupils of the low socio-economic group. In other words, although pupil attitude toward parents and adult authority apparently is related to pupil-achievement, socio-economic circumstance of pupil is a more basic controlling factor.

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* Observed differences among socio-economic levels are significant at the .01-level; differences among groups classified according to attitude toward parents, at the .05-level.

SUMMARY AND DISCUSSION OF FINDINGS

Three features of the total educational complex must be considered in assessing school system quality. These factors are:

1. Institutional potential, or the input factor. -- This refers to factors in the community and school settings that are related to school system effectivenes but are not controllable by school administration and teaching staff. Input ma also be interpreted to refer to the educative potential of pupil populations.

2. Educational Process. -- This refers to what the schools do with pupils -- to the instructional program, to method, to pupil-teacher relationships, and to the kinds and level of expectations of pupils that are implicit in what the schools do.

3. Outcome or output. -- This refers to changes in pupils that have been effected by schools.

In order to secure meaningful assessments of school system quality, it is necessary to take the position that school system output can be quantified, and that the outcome level of a system can be evaluated in the light of its institutional potential.

Outcomes can, of course, be quantified in areas for which generally acceptable standardized tests have been developed. Hence, useful measures of some educational outcomes are already available; and it may be assumed that research will constantly increase the number of outcomes for which measures will become available.

However, even if outcome measures were available for the whole spectrum of objectives of American education, scores or ratings of any given system on any or all of these measures would not in themselves be adequate to describe the effectiveness of the system. There is still the factor of institutional potential, or of input, to take into account.

A system serving a community in which the typical adult has completed only 7 or 8 years of formal schooling and works as a modestly-paid semi-skilled or unskilled worker can not be expected to achieve, on the same scale of outcome measures, as high an absolute score or rating as a system serving a community in which the typical adult has completed 13 or 14 years of schooling and earns a high income working in a professional, managerial, or ownership capacity. Two such systems operate in different cultural climates. The community attitudes toward, and expectations of, the schools differ for the two systems; and the differences in parental sophistication about education and cultural matters are necessarily reflected in their children's attitudes toward school and in the children's educational motivations and aspirations. The two school systems, in other words, have different institutional potential, or input. The effectiveness of each system is, therefore, not properly measured against the achievement of the other. Rather, it is necessary to measure the achievement of each system against the achievement of other systems like itself.

In other words, quality assessment requires the development of procedures for accounting for the input factor -- or, if one will, for holding input constant while measuring output.

The major first-year interest of the Quality Measurement Project was in his issue of ascertaining whether school systems are found to differ in outcome when nput is held constant. It was reasoned that, if so, it may be inferred that the differences are due to process and that further research to ascertain what the effective systems do to achieve their superior results will provide guidance toward improvement or all similar systems.

Three techniques for controlling input were explored:

1. One technique involved grouping together systems that seemed to have similar institutional potential and then examining outcome differences within groups of ostensibly similar systems.
2. Another technique involved the grouping of pupils according to their educative potential, as individuals, and studying the relative effectiveness of systems with different types of pupils thus classified.
3. The third technique involved the prediction of systems scores on outcome measures by the use of regression equations in which estimates of institutional and pupil potential were used as the predictors.

Details on these three exploratory efforts to assess school system effectiveness follow.

To explore the usefulness of systems classification as a technique for holding institutional potential constant, the 97 systems participating in the Project were classified into ten groups on the basis of community type and socio-economic level. These factors were used for systems-classification on the assumption that the institutional potential of a system is a reflection of the educational background of the people in the community, of their aspirations for and expectations of their schools, and of the level of their ability and willingness to support the schools in the development of educational facilities and programs. Systems scores were then secured on outcome measures in the basic skills areas. "System score" here means average test scores of a pupil in any one grade. In Grades 4 and 7 the outcome measures were tests of reading competence, vocabulary development, accuracy of English expression, computational skills, and work-study habits. In Grade 10, the measures were tests of vocabulary development, reading competency, accuracy of English expression, quantative thinking, basic knowledge in natural science and in social science, ability to interpret reading materials in natural sciences and social science, understanding literary materials, and skill in work-study activities.

On all of these tests, average scores for systems with similar potential -- that is, for the systems within any one of the ten groups -- ranged between one grade-equivalent and one and a half grade-equivalents apart at Grades 4 and 7 and more than two grade-equivalents apart at Grade 10. These within-group differences in systems means were highly significant statistically.

Thus, substantial outcome differences are discovered when institutional potential is held constant by considering together only systems operating in ostensibly similar settings.

The technique of grouping systems in order to control institutional potential of course sets expectancy levels for the members of any given group so constituted: whatever any one system has achieved in any one area can presumably be achieved by the other members of the group.

It would thus appear that the technique of grouping systems has value for assessing the relative effectiveness of systems in achieving specified educational goals, for setting achievable expectancy levels for different types of systems as regards those goals, and for identifying systems in which study of process might with greatest probable profit be made to ascertain what features of method and practice are related to superior results.

Operationally, there is great educational importance in the disclosure of differences of as many as two and a half grade-equivalents in the scores of the extreme systems in any one group of ostensibly similar systems on any one outcome measure used. Here is a challenge and an opportunity for improvement by the process of mutual self-study within groups of systems to ascertain what factors in the educational complex seem to be most closely related to superior effectiveness in achieving specified educational outcomes.

The second approach to holding input constant in order to estimate school system effectiveness involved the classification of pupils, within systems, according to presumptive educative potential. The assumption here was that variation in outcome among systems for the same category of pupils provides a measure of the relative effectiveness of systems.

Socio-economic level of pupil and measured IQ of pupil were used, each separately, to make two independent estimates of the educative potential of every pupil tested in Grade 7 in each of the participating school systems.

The socio-economic index, based upon parental occupation, was interpreted to reflect a complex of familial and cultural influences upon the pupil's educational interests, motivations, and aspirations. On the basis of socio-economic index, pupils were classified into three groups -- high-potential, average-potential, and low-potential; and mean composite achievement scores were computed for each of the three groups of pupils in each system that administered the battery of achievement tests described above. The participating systems were then ranked three times: first, on the basis of mean performance of their high-potential pupils; next, on the basis of mean performance of their average-potential pupils; and third, on the basis of mean performance of their low-potential pupils.

In similar fashion, pupils were classified into three groups on the basis of measured IQ, and the systems were also ranked three times on the basis of the mean test performance of their high-potential, their average-potential, and their low-potential pupils thus identified.

It was found that, regardless of whether socio-economic index or measured IQ is used for estimating the educative potential of pupils, systems tend to be unevenly effective with the different types of pupils. Particularly in the secondary grades, systems that rank high for the mean performance of their high-potential pupils, compared with what the other systems in the sample do with their high-potential pupils, tend not to rank equally high on the mean performance of their average-potential or low-potential pupils, compared with what the other systems do with their pupils of average or below-average educative potential, respectively. Conversely, some systems that did not rank high for performance of their high potential pupils did rank high for the performance of their average or low potential pupils.

Statistical evidence of this "unevenness" is found in the average correlations among the three rankings for systems. The average correlations among the rankings for mean performance of the three different types of pupils classified according to socio-economic index were .63 in Grade 4, .26 in Grade 7, and .36 in Grade 10. When pupils were classified according to measured IQ, these average correlations were .73 in Grade 4, and .52 in both Grade 7 and Grade 10. Even if the average correlations among rankings at Grade 4 are considered evidence of a tendency toward relative consistency in effectiveness (that is, of a system that ranks high on the mean performance of its high-potential pupils to rank similarly high on the mean performance of its pupils of average and below-average pupils), it is clear that unevenness in effectiveness is the rule by the time the pupils are in the junior high school grades.

Clearly, differences in systems effectiveness can be demonstrated if, as was done in the Project, pupil input is held constant by classifying pupils according to potential and it is then ascertained what outcome levels are being achieved by different systems for similar pupils. Operationally, there is considerable importance to the finding that systems tend to be unevenly effective with different types of pupils. This means, of course, that in general almost any system may well look to its own strengths and weakness in this regard, and happily, that there are identifiable models available for study to ascertain what kinds of educational situations are effective with different types of pupils.

The third approach to holding input constant while estimating systems effectiveness from scores on outcome measures was, as stated, to predict outcome scores from knowledge about institutional potential or input. In this instance, it was assumed that the difference between predicted score and the actual score for a system could be interpreted as the measure of system effectiveness in the area tested. Here, as before, socio-economic status of pupils and measured IQ of pupils were the available estimates of input or of institutional potential. These descriptive variables were used, separately and in combination, as the predictors in deriving three regression equations. The data used for computing the regression equations were the Grade 7 means for socio-economic index, measured IQ, and composite achievement score for each system in the QMP sample.

All three regressions were found to be significant and, hence, useful for predicting systems scores.

The regression equations made a mathematical adjustment for input; so, system-expectancy minus actual system-outcome became a measure of effectiveness. Systems either achieved, exceeded, or undershot expectancy; and the size of the residual (difference between expectancy and actual achievement) could be used as an index of effectiveness. Many systems either achieved expectancy or deviated only by .1 or .2 of a mean grade-equivalent score from expectancy; but some systems were found to deviate either in a plus or a minus direction as much as .5 or more of a grade-equivalent from expectancy. Hence, the regression-equation technique for estimating system effectiveness can be used for identifying systems in which it would be profitable to study processes and practices used in relation to outcome achieved.

It was found, further, that different groups of systems, classified as explained above, can be demonstrated to function differently from one another regarding their ability to achieve expectancy set by regression equations. For example, the two groups of urban systems for which expectancy is, by regression, set highest because they serve the most highly-favored communities tend to exceed expectancy. Specifically, of the 16 systems for which expectancy was set highest by regression against socio-economic level of community, 12 exceeded expectancy. Yet these are the systems that might be expected to suffer from "regression effect," that is, to have expectancy set so high for them that they would tend not to achieve the outcome level set for them. Contrariwise, the group of systems sharing the lowest socio-economic settings did not, as might be expected if regression effect were operative, tend to look better than the expectancy set for them. Actually, only 7 of the 13 systems in this group achieved expectancy; the other 6 fell below expectancy.

This finding suggests that in systems serving the more favored communities certain motivational factors -- certain community expectations -- are operative that stimulate these systems to "outdo" themselves, so to speak.

Here, it would seem, is an issue calling for further research that was identified by the exploratory work of the Project on the usefulness of regression equation for evaluating school system effectiveness.

Another finding of more than passing interest is that the rural systems, in general, tended to fall below expectancy, whether expectancy is predicted from socio-economic index or measured IQ. The inference is that the rural systems, as a type, require special study to ascertain what action may best be taken to raise the level of their effectiveness, generally.

The regression equations in which measured intelligence was used as a predictor resulted in smaller residuals than did the regression in which socio-economic index alone was the predictor. This is to be expected, since the verbal intelligence test and achievement tests have some overlapping content and require the use of the same basic skills (reading and computation, for example). Hence, when measured IQ is used as a predictor, the prediction reflects in part what the schools have already done.

In other words measured IQ is not a "pure" measure of input; rather, it is a measure of input plus skills that the schools have already taught. It therefore has something of a "built in" value for predicting scores on achievement tests. For this reason, it is suggested that the socio-economic index, which is a "purer" measure of input because it is less obviously related to prior schooling, may be the better variable to use in the assessment of school-system effectiveness.

It is suggested that the foregoing discussion of the three techniques used for holding input constant while assessing outcome demonstrates the feasibility of identifying systems which may well be studied as models of effectiveness in achieving specified educational outcomes. Systems with similar institutional potential differ in effectiveness, systems are in general not equally effective with pupils of different educative potential, and systems are not equally successful in achieving outcome levels that they may be expected to achieve as a function of their institutional potential or input.

When the input element is held constant as a factor in the estimation of effectiveness, it is appropriate to look to the educational situation -- to process, to use this term in a broad context -- for the variables that seem to have the strongest relationships with effectiveness.

In the first year of the Project, information was secured for individual system, across the sample of systems, about staff characteristics, and level of financial support. There was also secured, through an across-the-sample survey using classroom observation, information about school practices in the participating systems. It has already been noted, of course, that the Project accumulated, for individual pupils across the sample of systems, data on socio-economic status, measured IQ, and achievement in a number of skills areas at three different grade levels.

Correlational studies were undertaken among a selection of these variables to ascertain the strengths of the relationships among them. Several findings attest to the consistently positive relationship between system effectiveness and school expenditures; viz.,

> There is a product-moment correlation of .51 between per pupil-expenditure for instructional purposes and composite achievement score for system at Grade 7. This correlation, of course, disregards the issue of among-systems differences in institutional potential. However: --
>
> There is partial correlation of .31 between per-pupil expenditure for instructional purposes and composite Grade 7 achievement score, when socio-economic status has been partialled out and, in effect, institutional potential has been held constant. Still further:
>
> There is a correlation of .21 (which is significant at the .05-level) for the residuals between actual systems scores on composite achievement and expectancy based on socio-economic index ; that is, composite achievement predicted from socio-economic index. This means that the extent to which systems exceed or fall short of expectancy has a significant correlation with expenditure.

In general, it may be concluded that expenditure (and hence the things money buys) is positively related to school system effectiveness. The relationship is positive, even when there is control on system imput; but the relationship is not so strong as to avoid the inference that it is judicious expenditure, not just additional expenditure, that is related to increased effectiveness.

Two other findings add some detail to the foregoing findings about the relationship between expenditure and school system effectiveness:

> There is a product-moment correlation of .85 between expenditure for instruction and percent of teachers in a system who have had five or more years of training. Thus, additional money spent for instruction goes, in part at least, for the employment of better prepared staff.

There is a product moment correlation of .51 between per-pupil expenditure and the ratio of special staff (counselors, psychologists, et al.), indicating that additional expenditure in part goes to the provision of special educational services.

One finding about the correlation between expenditure for instruction and pupil-outcomes is particularly striking:

There is a correlation of .32 between expenditure and the achievement of pupils of high socio-economic status; but for pupils of average socio-economic status this correlation is only .04, and for pupils of low socio-economic status the correlation is -.18. Thus it seems that school systems, in general, tend to use additional financial resources for the benefit of the pupils of higher socio-economic status -- perhaps at the expense, educationally, of the pupils of lesser socio-economic circumstance.

Related to this finding is the finding that:

The per cent of teachers on the staff who have had five or more years of training correlates .36 with achievement of pupils of high socio-economic status, .07 with pupils of middle socio-economic status and -.18 with pupils of low socio-economic status. Thus, staff with richer educational background apparently tend to serve the needs of the socio-economically favored than of the less favored pupils. Using the talents of better prepared staff to achieve the aspirations of the community for its pupils of higher socio-economic status tends, it would seem, also to be at the expense of other types of pupils.

Three findings about teaching practices are of interest:

There is a product-moment correlation of .30 between composite achievement score for system and the tendency to use "life-like" learning situations and to make adjustment for individual differences that are given credit scores in the "Growing Edge," the observation schedule used in making the survey of educational practices.

There is a partial correlation of .21 (statistically significant at the .05 level) between residuals from regression and the use of practices that are given credit scores on the "Growing Edge." That is, there is a significant relationship between, on the one hand, the use of "life-like" teaching practices and of adjustments to individual pupil differences and, on the other hand, the tendency of systems to exceed or fall below outcome expectancy set by regression equation in which socio-economic status of system in the predictor.

There is a product-moment correlation of .30 between "Growing Edge" scores secured via observation of teaching practices in Grade 4 and "Growing Edge" scores secured in Grade 7. Thus, it would seem either that there is considerable inconsistency from the elementary level to the junior high school level in psychological approach to pupils and in teaching practices, or that the elementary-level form of the

"Growing Edge" and the secondary-level form of the instrument do not measure the same things.

Related to these findings about school practices is the finding that:

> Between systems which are closely matched for institutional potential (as estimated from community setting and socio-economic status of pupils), the system whose teachers are the more subject-oriented will tend to promote higher pupil achievement in the skills area. Slight differences in the direction of subject-centeredness (as contrasted with pupil-centeredness) will tend to reflect themselves in higher achievement scores if the systems being compared are closely alike on the criteria of institutional potential used during the first year of the Project. This finding demonstrates, in a sense, the sensitivity of systems outcome to process differences. It warrants the hope that further careful study of systems which exceed or fall below expectancy will reveal process factors that are responsible for superior and inferior school system quality.

The corollary to this finding is another finding; namely, that:

> When systems are closely matched with respect to institutional potential, the system with staff that is, relatively speaking, more ingenious and more systematic in developing learning enterprises will tend to produce lower systems scores on measures of outcomes in the skills areas. It can hardly be assumed that desirable staff qualities like creativeness and devotion to systematic planning are wasted. Rather, it is more reasonable to assume that differences in staff orientation reflect differences in system emphasis upon particular pupil outcomes and that these desirable qualities of staff are related to outcomes not in the skills areas. The problem for future research is to develop measures of non-skills outcomes so as to secure more complete assessments of systems quality than it was possible to secure in the first year of the Project.

One more finding should be noted in this summary, namely that:

> There is a relationship between pupil outcomes in the skills areas and pupil attitude toward parents and adult authority generally. The importance, in school system assessment, of defining "input" has already been discussed; and there has also been discussion of the relative usefulness of socio-economic index and of measured IQ as indications of input. The fact that a non-intellective pupil-variable like attitude toward parents is related to achievement suggests the need for further research on the issue of defining input in terms of pupil background factors.

The foregoing findings constitute only a beginning in the exploitation of the research data and, more important, of the unique educational research laboratory made available to the New York State Education Department through the cooperation of its great nexus of school systems participating in the Quality Measurement Project.

In its first year of operation, the Quality Measurement Project has opened up a major field for long-range research and development. A basic fund of data on school system input, process, and outcomes has been secured. The data have thus far been used to probe the critical issue in quality assessment of holding the factor of input constant while measuring outcome. A beginning has been made in exploring the many relationships that the already accumulated data are able to define between, on the one hand, school system effectiveness and, on the other hand, administrative variables, staff characteristics, and teaching practices. Provocative findings, on this score, have resulted from the only partial use that it has been possible thus far to make of the data; and it may be expected that additional insights into the dynamics of school system effectiveness will result from the already-planned further exploitation of the data now on hand.

Meantime, the Project is even now able to identify systems where it would be profitable to study programming and teaching approach, in relationship to salient characteristics of the pupil population, in order to discover what accounts for their superior effectiveness.

It is characteristic of a long-range, continuing enterprise like the Quality Measurement Project that it always has on hand data still to be analyzed, is seeking at the same time new information, and is continuously identifying the needs for new research tools or for attacking new research problems relevant to its central problem. This sort of framework, in fact, defines the future of the Project.

Data on hand will continue to be studied. New information on pupil outcomes is already being secured through a second round of achievement testing this school year (1958-59) in Grades 5, 8, and 11 in the same school systems that last year tested for the Project in Grades 4, 7, and 10. This sequential testing is directed at the development of longitudinal data on system outcomes and patterns of pupil progress that, it is believed, are integral to system assessment. The longitudinal data will answer questions about year-to-year consistency in relative effectives, about the effect of differential grade placement of emphasis upon selected pupils' outcomes, and about among-system differences in the educational progress of different categories of pupils. The need has been identified for research basic to developing procedures for more precisely classifying systems in terms of institutional potential, for classifying pupils in terms of educative potential, and for measuring pupil outcomes that fall outside the skills areas to which the tests used this year were limited. The long-range plans of the Project include provision for attack upon issues of these sorts.

APPENDICES

APPENDIX A

SURVEY OF TEST UTILIZATION AND LOCAL PATTERNS OF TESTING IN THE SAMPLE OF SCHOOL SYSTEMS PARTICIPATING IN THE QUALITY MEASUREMENT PROJECT

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SURVEY OF TEST UTILIZATION AND LOCAL PATTERNS OF TESTING IN THE SAMPLE OF SCHOOL SYSTEMS PARTICIPATING IN THE QUALITY MEASUREMENT PROJECT.

In the fall of 1957 the Project conducted a survey, by questionnaire, in order to ascertain what testing programs had been developed in each of the cooperating school systems. Interest in this survey focused upon the utilization of available tests of achievement; intelligence, and aptitude; personality, character, and interest; and physical tests of fitness, hearing and vision.

The survey was intended to serve several purposes. First, it was desired to get a description of variation among systems in their testing programs and their test utilization. Second, it was desired to identify systems that have been keeping sequential, longitudinal test records on the same pupils for a period of years. In this connection the Project is committed to a study of the usefulness of longitudinal records in identifying patterns of pupil growth that are related to variation in pupil background .characteristics and to school process factors. Third, it is important for the Project to know what tests are used at the local level so that it may work toward reporting findings in terms of instruments generally in use, rather than instruments arbitrarily selected by the Project. The findings of the Project, it is believed, should be applicable in any system regardless of what particular tests it may be using at the local level. In this last connection, it is reported that tentative arrangements have been made between the Project and the American Textbook Publishers Institute to cooperate on the issue of insuring multi-test use by the Project.

Survey Procedure:

The questionnaire developed for this survey is attached, labelled Exhibit A. This questionnaire was addressed directly to the central office staff member in charge of the system-wide testing program in each of our cooperating school systems. The questionnaire asked for a report on the system-wide testing program. The form simplified the problem of reporting by providing ten tables, each for a different type of test or battery of tests, viz.:

Table 1.	Achievement Test Batteries
Table 2.	Separate Achievement Tests (as distinguished from multi-test batteries)
Table 3.	Group Intelligence Tests
Table 4.	Aptitude Tests
Table 5.	Personality, Character, and Interest Inventories
Table 6.	Individual Tests (as distinguished from group tests)
Table 7.	Hearing Tests
Table 8.	Vision Tests
Table 9.	Physical Fitness Tests
Table 10.	Miscellaneous Tests (tests not classifiable under Tables 1 - 9)

On most of the tables there were listed the names of a few of the more commonly used tests of each category listed. These listings helped to clarify what we had in mind when we gave each table its title: viz., "achievement batteries," "aptitude tests," etc.

The respondents were advised that, for the purposes of this survey, any group test is considered administered on a system-wide basis if it is given to all pupils in at least one grade or to all pupils in a special type of school, like the vocational high schools. Individual tests, like the Stanford-Binet, are to be considered given on a system-wide basis if they are administered, as a feature of a regular process of referral, to special types of pupils -- as, for example, pupils who score below 70 IQ on a group intelligence test.

In completing the questionnaire, the respondents listed on each table the names of the tests used on a system-wide basis in the schools, indicating in the appropriate columns: (1) the grade(s) in which each test is given, (2) the months when the test is usually given each school year, and (3) the approximate number of years that each test listed has been in use in their school system.

Ninety-four (94) of the 100 systems completed and returned the questionnaire. All 94 of these systems had classes in Grades 1 through 6; ninety-one (91) had classes in Grades 10 -- 12. Data are summarized in the following pages on the basis of these three N's.

I. Achievement Tests

A. Utilization of Achievement Batteries

Ten (10) different achievement batteries are in use in the 94 systems. (See Table A-1 on the following page.)

TABLE A-1
Achievement Battery Utilization

Name of battery	Number and per cent of respondents using battery in grades indicated					
	1 - 6[a]		7 - 9[b]		10 - 12[c]	
	Number	Per cent	Number	Per cent	Number	Per cent
California Achievement Tests	15	16	7	8	1	1
Cooperative General Achievement Tests	-		1	1	1	1
Coordinated Scales of Attainment	2	2	2	2		
Essential High School Content Battery	--		2	2	1	1
Iowa Tests of Basic Skills	43	46	37	41	-	
Iowa Tests of Educational Development	-				31	35
Metropolitan Achievement Tests	26	28	5	5	-	
Science Research Associates	2	2	5	5	1	1
Sequential Tests of Educational Progress	2	2	2	2	2	2
Stanford Achievement Tests	45	48	25	27	-	

[a] N = 94 [b] N = 91 [c] N = 89

In grades 1 — 6, four achievement batteries are in greatest use: the California, used by 16% of the respondents; the Iowa, by 43%; the Metropolitan by 26%, and the Stanford by 45%. These percentages total more than 100 because the same system sometimes uses two different batteries in its elementary grades.

The SRA battery and the STEP are too new to have made much inroad, but these two batteries may become challenges to the long-time leaders in the achievement battery field.

In the junior high school level, the Iowa and the Stanford are far ahead of all other achievement batteries, being used by 41% and 25% of the respondents, respectively. None of the others is used in more than five of the 94 systems reported in Table A-1 above. In the high school level, the Iowa Test of Educational Development is almost the only achievement battery in use, and it is used in only 35% of the systems reporting.

The frequency with which achievement batteries is given within any one school level (elementary, junior high, and senior high) is reported in the following table:

Table A-2
Number of Grades in which Achievement Batteries Are Used

Number of annual testing with achievement batteries	Number and percentage of systems reporting indicated number of annual testings:					
	Within grades 1-6[a]		Within grades 7-9[b]		Within grades 10-12[c]	
	Number	Per Cent	Number	Per cent	Number	Per cent
0	4	4	14	15	53	60
1	3	3	15	16	16	18
2	5	5	35	38	7	8
3	10	11	27	30	13	15
4	17	18	X	X	X	X
5	19	20	X	X	X	X
6	36	38	X	X	X	X

[a] N = 94 [b] N = 91 [c] N = 89

In the elementary level, 96% of the reporting school systems use an achievement battery at least once in the six-year span. Thirty-eight per cent (38%) of the school systems administer an achievement battery every year from Grade 1 through Grade 6. Another 20% begin to use achievement batteries in Grade 2 and then test every year thereafter through Grade 6; and still another 18% begin testing in Grade 3 and test for four consecutive grades through Grade 6. The achievement battery is well entrenched in the elementary school, and it is the exceptional school that does not use it or that uses it only once or twice in the six-year span.

In the junior high school, an achievement battery is used at least once during the three-year span by 85% of the school systems reporting. Thirty-eight per cent (38%) of the systems administer achievement batteries in two of the three junior high school grades, and 30% administer them in all three grades.

In the high schools, 18% of the systems use an achievement battery once in the three-year span; 8% twice; and 15%, three times. Sixty per cent (60%) of the respondents do not use achievement batteries in Grades 10, 11, or 12.

B. Use of Combinations of Separate Achievement Tests in Lieu of Batteries

The typical achievement battery contains tests in English, mathematics, science, social studies, and study skills. These areas are different at the different levels. English in the elementary level is usually reading and vocabulary, but in the secondary level it will include usage and literature and sometimes composition or reading in special areas, like science. Mathematics at the lower level is straight computation and simple problem-solving. but it becomes algebra and geometry later on. By a careful selection of separate tests, the local system can assemble batteries of its own.

In the elementary level, this sort of local assembling of an achievement battery is done only in two of the four systems that do not report the use of a real battery in Grades 1--6. One of these two respondents reports that reading tests are given in all grades from Kindergarten through Grade 6 and that, in addition, an arithmetic test is given in Grade 4, and a study skills tests is given in Grade 5. The other system reports giving reading tests in Grades 1, 2, 3, 6, and 8 and arithmetic tests in Grades 2 through 6. This leaves two of the 94 systems apparently without any achievement testing at all in the elementary level.

Of the 14 systems that do not use achievement batteries in their junior high schools, only one uses separate achievement tests in as many as three areas. In this one case, the system gives reading tests in Grades 7, 8, and 9; social studies tests in Grades 7, 8, and 9, and a mathematics test in Grade 9. Only four more of the 14 non-users of achievement batteries in the junior high schools test with separate tests in as many as two areas: three of these test in reading and arithmetic only, and one tests in reading and study skills.

Obviously, the 14 systems that are non-users of achievement batteries in their elementary grades and in their junion high schools do not make up the deficiency by testing with separate instruments in a variety of areas. They do not even make much use of the free tests available from the State Education Department in reading, math, social studies, and science. Of the 14 systems, one uses the N. Y. S. progress tests in two areas (in this case, reading and math); four, the reading test only; three, the arithmetic test only; and one, the science survey only.

Among the 53 systems that do not use achievement batteries in their senior high schools, between one-fourth and one-third do some testing in the English language modalities in Grades 10--12, but there is no serious effort to make up "batteries" locally. Reading tests are given by 15 of these 53 systems: 4 give reading tests in Grade 10 only; 2, in Grades 10 and 11; 8, in Grades 10, 11, and 12; and 1, in Grade 12 only. English usage or composition tests are given by 10 of the 53 non-users of high school achievement batteries: 4 use these tests in Grade 10 only; 3, in Grades 10 and 11; 1, in Grade 11 only; and 6, in Grades 10, 11, and 12.

Only one of the 53 non-users of achievement batteries in Grades 10-12 administers arithmetic tests (in this case, the NYS Progress test); and only two systems give a standardized geometry test. None of these 53 non-users of batteries administers a separate science test of any sort in Grades 10, 11, or 12. In fact, only one of the 53 non-users of achievement batteries uses more than two separate achievement tests in its high schools. This one system gives five tests: reading and spelling in Grades 10-12, plane geometry in Grade 10, French (listening) in Grade 9, and Social Studies (contemporary affairs) in Grade 12.

To summarize the gross findings on achievement testing in the 94 systems reporting: it is discovered that achievement batteries are used in 96% of the elementary schools, in 85% of the junior high schools, and in 40% of the high schools. Eighty-five percent (85%) of the schools use achievement batteries in three or more of the six elementary grades, 62% of the schools use them in two or three of the junior high school grades, and 23% of the school systems use them in two or three of the high school grades.

In systems that do not use achievement batteries in a given level, it is not likely that they will be using in that level separate tests covering the same areas as are covered in the more popular batteries. In fact, first-order evidence of strength or weakness in achievement testing in a system would seem to be its use or nonuse of an available standardized achievement battery.

Achievement testing by available standardized tests - batteries or separate area tests is strong in the elementary level and the junior high school level, but relatively weak in the high schools.

C. Utilization of Separate (non-Battery) Achievement Tests

Fifty (50) different separate achievement tests in the skills and content areas were listed as being in use in the 94 school systems. However, except in reading, it would seem that these listings do not add much enrichment to the testing program of the systems sampled.

1. Reading Tests

Twenty-one (21) different reading tests were reported in use in the 94 systems. These tests are identified in Table A-3.

Three of the tests measure reading readiness in young children. Two are diagnostic tests. Two are associated with reading series. The remainder are familiar titles in the reading achievement field.

The reading-readiness tests in use in 52, or 55%, of the reporting systems represent enrichment in the testing program in the Kindergarten and Grade 1. The Metropolitan is obviously the popular reading-readiness test in the school systems sampled, being used by 40% of the systems reporting.

In the elementary grades, the Gates series is the leader among the non-battery-associated reading tests being in use in 46, or 49%, of the 94 systems. The other separate reading tests used in the elementary grades have limited distribution. The California and the Iowa, which are sections of the batteries identified in Table A-3 are used in only 9 and 5 school systems, respectively.

The New York State Reading Progress Test is reported to be in use in the elementary grades in only 15 school systems of the 94 reporting.

In the junior high schools and the senior high schools, 10 different reading tests are reported in use, not in connection with battery achievement testing. None of these 10 tests has much dispersion among the sample of systems. Eight (8) are in use in only one to three systems. The Iowa and the Cooperative are in use in 8 systems each. The New York State Reading Progress Test is reported used by 14 systems in the junior high school level and by 5 systems in the high school level.

Table A-3 Separate Reading and Reading Readiness Tests Reported in Use in 94 School Systems

Names of Reading Tests	Number and Per Cent of Systems Using Test in Grades Indicated					
	K - 6*		7 - 9**		10 - 12***	
	N	%	N	%	N	%
Reading Readiness						
Lee Clark Reading Readiness	11	12				
Metropolitan Reading "	38	40				
Monroe Reading Readiness	3	3				
Reading Tests						
California	9	10	2	2	3	3
Coop Reading			7	8	7	8
Diagnostic	2	2	3	3		
Dolch-Gray	2	2				
Durrell Diagnostic	3	3				
Gates	46	49	3	3		
Ginn & Company	2	2				
Harrison-Stroud	3	3				
Iowa Silent Reading	5	5	8	9	7	8
Nelson-Denny	2	2	4	4	5	6
N. Y. S. Reading Progress	15	16	13	14	5	6
SRA Reading Progress	1	1	3	3	1	1
Scott Foresman	4	4				
Stanford	2	2	2	2	1	1
Stroud-McKee	2	2				
Traxler			1	1	1	1
Chicago	2	2				
Row, Peterson Reading Achievement	2	2				

*Total N = 94 **Total N = 91 *** Total N = 89

2. Utilization of Separate (non-battery) English Usage. Mechanics, Spelling, and Vocabulary Tests

The English usage, spelling and vocabulary tests reported in use in the 94 systems are listed in Table A-4.

Table A-4 English Tests in Use in 94 Systems

	Number and percent of systems using tests in grades indicated					
	K - 6*		7 - 9**		10 - 12 ***	
	N	%	N	%	N	%
California Test of English Usage					1	1
Coop. English Test			4	4	12	13
Coop. Mechanics of Expression			2	2	2	2
Durost -Center Word Mastery					2	2
Essentials of English Test	1	1			1	1
Henman-Nelson English Test			1	1	2	2
Inglis Vocabulary Tests			1	1	2	2
Iowa Language Ability			1	1		
Lincoln Diagnostic Spelling			1	1	1	1
Michigan Vocabulary Test					1	1
New York State English Survey			4	4		
Pribble McCrory Diag. Test in Pract. Eng. Grammar			1	1	1	1
Stanford Spelling	1	1				
Ullman			1	1	1	1

*N = 94 **N = 91 ***N = 89

In the elementary level, only one spelling and one usage test are reported, in each case by one system.

In Grades 7-9, nine different English tests are reported in use in the 91 systems having junior high school departments. Six of these tests are in use in only one system each; one, in two systems; and two, in four systems. One of the latter is the New York State English Survey Test.

In Grades 10-12, eleven (11) different English tests are in use in the 89 systems having high school departments. Ten (10) of these tests are used in only one or two systems each. Only the Cooperative English Test is in use in any appreciable number; in this case, 12 systems.

In all, the use of non-battery tests of English language usage, spelling, and vocabulary is minimal in the 94 reporting systems.

3. Utilization of Separate Tests of Arithmetic and Mathematics

Table A-5 lists all the arithmetic and mathematics tests, including prognosis tests, reported in use in the 94 reporting systems.

In all, fourteen (14) non-battery arithmetic or mathematics tests are reported used. Only one of these fourteen tests is used in more than one to three systems: The New York State Arithmetic Progress Test is used in 14 systems in the elementary grades, 17 systems in the junior high school grades, and in 2 systems in the senior high school level.

Table A-5

Arithmetic and Mathematics Tests in Use in 94 Systems

Name of Test	Number and percent of systems using tests in grades indicated					
	K - 6*		7 - 9**		10 - 12***	
	N	%	N	%	N	%
Basic Skills in Arithmetic			1	1		
California Arithmetic Test	1	1				
Coop. Elementary Algebra			3	3		
Coop. Math. Test					1	1
Coop. Plane Geometry					2	2
Davis Test of Functional Competence in Math.					1	1
Iowa Arithmetic			1	1		
Lee Geometry Prognosis			1	1		
Metropolitan Arithmetic Achievement	1	1	2	2		
N. Y. S. Arithmetic Progress	14	15	17	19	2	2
N. Y. S. Jr. High School Survey Test-Math			1	1		
Stanford Arithmetic Test	1	1	1	1		
Woody-McCall Arithmetic			1	1	1	1
World Book Co. - Arithmetic Ach.	1	1				

*N = 94 **N = 91 ***N = 89

4. Utilization of Separate (non-battery) Science Tests

No table is needed here. No reporting system uses a separate science test in Grades 1-6 or Grades 10-12. One system reports using the Cooperative General Science Test in its junior high school, and 14 of the 94 systems report using the New York State Science Survey.

5. Utilization of Separate Social Studies Tests

Here again, no table is needed. No system reports a separate social studies or history test for the elementary grades. Only three systems report a test of these types used in their junior high schools, and only four systems use a separate test of these types in the senior high school.

Only five separate tests were named in the survey returns; viz.:

Cooperative Social Studies Test
Stanford Social Studies Test
Crary American History Test
Cummings Work History Test
Cooperative Contemporary Affairs Test.

The first of these is given in two systems; the last five, in only one system each.

6. Use of Achievement Tests vs. Availability

The relatively unimpressive number of separate achievement tests used in the sample is a matter of choice, not a result of a dearth of available tests.

The Fourth Measurement Yearbook (1953) lists the following numbers of new or recently revised tests in the areas just reviewed:

Reading Readiness	7
Reading Achievement	33
English Usage	30
English Spelling or Vocabulary	15
Arithmetic	24
Mathematics	31 *
Geometry	16
Trigonometry	3
Science (Elementary)	7
General Science	7
Biology	8 *
Chemistry	14 *
Social Studies	8 *
Physics	10 *

The schools that use batteries are apparently satisfied with the coverage that these batteries make in the several fields listed above; and the non-users of batteries are, as stated, not committed to strong testing programs via any kind of standardized tests.

In particular, the high schools in the systems cooperating in this survey of test utilization are making relatively little use of the rather large fund of achievement tests available in battery or separate test form. Perhaps this is in part the result of the Regents Examination tradition in New York State. The

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* Excluding College Entrance Examination Board Tests or Graduate Record Examination Tests.

Regents are not given on a system-wide basis; but, even so, the performance of the pupils who take them may have become the accepted measure of the success of the school system in many quarters. Hence, other achievement testing -- even via other New York State achievement tests -- is de-emphasized in Grades 10 - 12.

II, Intelligence Tests

Table A-6 lists the intelligence tests in use in the 94 reporting systems, indicating frequency of use in the systems, by school level.

Table A-6 Intelligence Test Utilization

	Number and Percent of Respondents Using Test in Grades Indicated					
	K - 6[a]		7 - 9[b]		10 - 12[c]	
	Number	Per cent	Number	Per cent	Number	Per cent
A. C. E.		1	2	2	43	48
California Mental Mat.	42	45	31	34	15	17
Coop. Inter-American	1	1	2	2		
Durrell Capacity	2	2				
Goodenough	4	4				
Henmon-Nelson	8	9	9	10	4	4
Hellinger-Crowder			1	1	1	1
Kuhlman-Anderson	20	21	2	2	1	1
Kuhlman-Finch	6	6	1	1		
Lorge-Thorndike	9	10	8	9	4	4
Ohio State University					4	4
Otis	28	30	41	45	22	25
Pintner	21	22	4	4	2	2
S. R. A. (Verbal Form)	3	3	8	9	2	2
S. R. A. (Non-Verbal)			2	2	1	1
Terman-McNemar			1	1		

[a] N = 94 [b] N = 91 [c] N = 89

Sixteen (16) different intelligence tests are reported. The most frequently used across-the-grade tests are the California, Otis, and Kuhlman-Anderson. The Pintner is fairly strong in the elementary grades; and the Lorge-Thorndike has fair distribution, considering its relative newness. In the secondary level, the leaders are the A. C. E., California, and Otis.

In the elementary grades, 45% of the schools reporting administer the California; 30%, the Otis; 22%, the Pintner; 21%, the Kuhlman-Anderson; and 10%, the Lorge-Thorndike. Other tests reported are the: Cooperative Inter-American (a Spanish-language test), Durrell, Goodenough (Draw-a-man), Henmon-Nelson, Kuhlman-Finch, and the S. R. A.

In the junior high school grades, the leaders are: The Otis, in use in 45% of the school systems; the California, in 34%; the Lorge-Thorndike, in 9%; and the S. R. A. (Verbal), in 9%.

In the senior high school, the leaders are: the A. C. E., in use in 48% of the reporting systems; the Otis, in 25%; and the California, in 17%.

Table A-7 indicates how often any one system uses an intelligence test in each of the three levels.

Typically, the reporting school systems use intelligence tests two or three times in the seven-year span from Kindergarten through Grade 6. However, 10% test every year -- and almost half of these even test in Kindergarten. Fourteen per cent (14%) test four or five times in the seven-year span. Only one school reports the non-use of an intelligence test in its elementary level.

Table A-7 Number of Grades in Which Intelligence Tests are Used in Any One System

Number of annual testings with int. tests	Number and percent of systems reporting use of Intelligence test in number grades indicated					
	Within Grades K-6[a]		Within Grades 7-9[b]		Within Grades 10-12[c]	
	Number	Percent	Number	Percent	Number	Percent
0	1	1	10	11	23	26
1	4	4	37	42	35	39
2	32	34	24	26	13	15
3	34	36	19	21	17	19
4	11	12	X	X	X	X
5	2	2	X	X	X	X
6	6	6	X	X	X	X
+ 7	4	4	X	X	X	X

+ These four systems test every year for 7 years, from K through 6.

[a] N = 94 [b] N = 91 [c] N = 89

This strong advocacy of intelligence testing continues in the junior and the senior high school levels. In the three-year span from Grade 7 through Grade 9, 42% of the systems give an intelligence test once; 26%, twice; and 21%, three times. In Grades 10-12, 39% of the systems test once; 15%, twice; and 19%, three times.

Ten percent (10%) of the systems do not administer an intelligence test in the junior high school, and 26% do not test in Grades 10-12.

The above figures need little verbal elaboration. The schools are "sold" on intelligence testing. In the elementary level, intelligence tests are as strongly entrenched as achievement tests. In the junior high school, intelligence tests are used somewhat more widely than achievement tests. In the senior high school, the intelligence test encounters little of the resistance that achievement tests seem to be meeting in some systems.

The group intelligence tests, reviewed above, are supplemented by the widespread use of individual tests, sometimes given routinely to all younger children, more often given on referral basis. The following individual intelligence tests were reported in use:

Table A-8 Number and Percent of Respondent Systems Using Individual Intelligence Tests

Name of test	Grades K - 6 *		Grades 7 - 9 **		Grades 10 - 12 ***	
	Number	Percent	Number	Percent	Number	Percent
Arthur Point Scale	1	1	2	2		
Bender-Gestalt	10	11	9	10	7	8
Blacky Picture	5	5	3	3	2	2
Columbia Mental Mat. Scale	2	2	1	1		
Cornell-Cox			1	1	1	1
Children's Apperception	10	11	1	1	1	1
D. A. T.			1	1	1	1
Figure Drawing	3	3	2	2	2	2
Grace-Arthur					1	1
Michigan Picture Test			1	1		
Porteus Maze	1	1	1	1		
Rorschach	21	22	24	26	22	25
Sentence Completion	1	1	1	1	1	1
Stanford-Binet	47	50	40	44	35	39
Symonds Pict. Story			1	1		
TAT	17	18	18	20	16	18
Wechsler-Bellevue (and WISC)	43	46	45	49	34	38

*N = 94 **N = 91 ***N = 89

The Stanford-Binet, Wechsler, Rorschach, and TAT are, as would be expected, in most frequent use. (Total percents in the above list do not add to 100 because systems that have psychologists use more than one test of this type.)

III. Aptitude Tests

Aptitude tests fall into two general categories: (1) batteries that measure several abilities in different areas and (2) single tests of special abilities, like artistic ability, musical talent, clerical ability, aptitude for learning foreign language, prognosis of success in algebra, geometry, science, etc.

A. Aptitude Batteries

1. Characteristics: The aptitude batteries are, in many respects, reminiscent of intelligence tests that give multiple scores. That is, the aptitude batteries will, like some intelligence tests, give subscores on verbal reasoning, numerical ability, ability to deal with space relations, and capacity for abstract reasoning. In addition, the aptitude batteries sometimes purport to cover such areas as clerical accuracy, mechanical reasoning, capacity for learning new languages, and scientific ability. There follow listings of the "aptitudes" for which available batteries purport to give seperate scores.

Aptitude Tests For Occupations:
(For Grades 9 - 13)

- Mechanical Aptitude
- General Sales Aptitude
- Clerical Routine Aptitude
- Computational Aptitude
- Scientific Aptitude

Differential Aptitude Tests:
(For Grades 8 - 12)

- Verbal Reasoning
- Numerical Ability
- Abstract Reasoning
- Space Relations
- Mechanical Reasoning
- Clerical Speed and Accuracy
- Language Usage

General Aptitude Test Battery
(U.S. Employment Service;
for ages 16 and over)

- Intelligence
- Verbal Aptitude
- Numerical Aptitude
- Spatial Aptitude
- Form Perception
- Clerical Perception
- Eye-Hand Coordination
- Motor Speed
- Finger Dexterity
- Manual Dexterity

Flanagan Aptitude Classification Tests:
(Senior H.S. and beyond)

- Inspection
- Coding
- Memory
- Precision
- Assembly
- Scales
- Coordination
- Judgment and Comprehension
- Arithmetic
- Patterns
- Tables
- Mechanics
- Expression

Guilford-Zimmerman Aptitude Survey
(For Grades 9 - 16)

- Verbal Comprehension
- General Reasoning
- Numerical Operations
- Perceptual Speed
- Spatial Orientation
- Special Visualization
- Mechanical Knowledge

Primary Mental Abilities
(For Ages 5 - 17)

- Words
- Pictures
- Verbal Meaning
- Space
- Word-grouping
- Figure-grouping
- Reasoning
- Perception
- Number
- Non-Verbal

Yale Educational Aptitude Test Battery
(For Grades 9 - 16)

- Verbal Comprehension
- Artificial Language
- Verbal Reasoning
- Quantitative Reasoning
- Mathematical Aptitude
- Spatial Relations
- Mechanical Ingenuity

Of the foregoing aptitude batteries, only the PMA and the Yale are of long vintage. The others are fairly recent.

2. Utilization of Aptitude Batteries: The PMA (Primary Mental Abilities Test) is the only one of the seven batteries just anatomized that is intended for use below Grade 7. It is used in five of the 94 school systems reporting.

In the junior high school level two of these batteries are reported in use: the PMA in 9 (12%) of the systems and the Differential Aptitude Test in 42 (46%) of the systems. The DAT, it should be noted, has received rather enthusiastic praise in some critical reviews; and it is probably making its way into the schools on the strength of this favorable publicity.

In the senior high school, 14 (15%) of the systems use the DAT; 10 (12%), the GATB; 2 (3%), the PMA; and 2 (3%), the Flanagan.

B. Non-Battery Aptitude Tests in Special Field

There follows a listing of all the seperate aptitude tests listed as being in use in any of the 94 systems reporting.

Name of Aptitude Test	Number of respondents reporting use in grade-levels indicated		
	Grades 1 - 6	Grades 7 - 9	Grades 10 - 12
ART			
Graves Design Judgement		5	2
Horn Art Aptitude		1	
Krauber Art Ability Test		1	
Meier Art Test	1	2	2
MUSIC			
Conrad Music Aptitude	1		
Drake Musical Aptitude	2		
Kwalwasser Musical Aptitude	5	3	
Lyons Music Aptitude	1		
Musical Aptitude Test	5	5	
Pan-Americal Instrumental Aptitude	1		
Seashore Test of Musical Aptitude	1		
MECHANICAL			
Bennett Mechanical Aptitude		3	1
Detroit Mechanical Aptitude		1	1
MacQuarries Mechanical Aptitude		1	
Minnesota Paper Form Board		6	3
Purdue Peg-Board Mech. Apt.		3	3
SRA Mechanical Aptitude		4	2
Stromberg Dexterity Test		1	

Name of Aptitude Test	Number of respondents reporting use in grade-levels indicated		
	Grades 1 - 6	Grades 7 - 9	Grades 10 - 12
CLERICAL			
ERC Clerical Aptitude		2	1
Minnesota Clerical Aptitude		7	4
Psych. Corp. General Clerical Aptitude		1	
SRA Clerical Aptitude		2	
Turse Clerical Aptitude		6	
Turse Shorthand Aptitude		12	5
ALGEBRA			
Iowa Algebra Aptitude		6	
Lee Test of Algebra Ability		1	
Orleans Algebra Prognosis		13	
PLANE GEOMETRY			
Iowa Plane Geometry Aptitude		3	
Lee Test of Geometric Ability		1	
Orleans Geometry Prognosis		5	2
FOREIGN LANGUAGE			
Orleans Foreign Language		5	
Foreign Language Progress Test		5	
SCIENCE			
Moore Science Aptitude (Engr. & Phys.)			1
Stanford Scientific Aptitude			1
PROFESSIONS			
Geo. Washington Teaching Aptitude			1
Geo. Washington Nursing Aptitude			1

In all, 37 different non-battery aptitude tests are reported in nine areas.

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In the elementary level, aptitude testing is confined to the area of music and art, and only a handful of systems test in these areas.

The junior high school level shows some activity in aptitude testing in art, music, mechanical ability, clerical work, mathematics, and language. Roughly, the percentages of the reporting systems use seperate aptitude tests in these areas in junior high schools are as follows: art 12%; music 10%; mechanical work 29%; clerical work 38%; algebra 26%; plane geometry 11%; and modern foreign language 14%.

In the high school, about 15% of the schools test for mechanical ability and 14% for clerical ability. Only one isolated school system or so uses any other of the individual aptitude tests reported.

To summarize findings on aptitude testing: the 94 systems, as a group, are using, in some numbers each, most of the available aptitude batteries, and they are making spotty use of some of the separate tests of aptitude in art, music, mechanical work, clerical aptitude, foreign language, mathematics, and science. The school systems that use aptitude batteries lean toward aptitude batteries that are most reminiscent of intelligence tests (the PMA and DAT).

IV. Interest Inventories

Interest inventories are in general use in the 94 reporting school systems, as the following tabulation indicates:

Name of Interest Inventory	Percent of schools reporting use of indicated inventory in:	
	Junior High School	Senior High School
Brainard Occupations Pref. Inv.	1	-
Kuder Preference Record	88	45
Occupational Interest Inv.	13	5
Strong Vocational Int. Blank	-	8

The above percentages are not additive, since some systems use more than one inventory in their junior high school or in their senior high schools. However, it is obvious that the Kuder Preference Record has found its way into the great majority of the junior high schools in the QMP sample. It is also used in about two-fifths of our senior high schools.

EXHIBIT A Questionnaire used in the Survey of Local Testing Patterns

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THE UNIVERSITY OF THE STATE OF NEW YORK
The State Education Department

Donald H. Ross
Coordinator of Research
and Special Studies

Samuel M. Goodman, Director
Quality Measurement Project
46 Chapel Street, Albany 7.

SURVEY OF LOCAL TESTING PROGRAMS IN THE 100 SCHOOL SYSTEMS PARTICIPATING IN THE QUALITY MEASUREMENT PROJECT

Report From : ______________________________
School System

Prepared By : ______________________________
Name Official Title

Date Prepared: ______________________________

(Please return this form to the Quality Measurement Project, 46 Chapel Street, Albany, New York, by January 15, 1958.)

Instructions: The purpose of this survey form is to secure from each of the 100 school systems participating in the QMP a description of its local system-wide testing program.

To facilitate your reporting, ten tables are attached, each labeled for a different type of test or inventory, as follows:

Table 1. Achievement Test Batteries
Table 2. Separate Achievement Tests (as distinguished from multi-test batteries)
Table 3. Group Intelligence Tests
Table 4. Aptitude Tests
Table 5. Personality, Character, and Interest Inventories
Table 6. Individual Tests (as distinguished from group tests)
Table 7. Hearing Tests
Table 8. Vision Tests
Table 9. Physical Fitness Tests
Table 10. Miscellaneous Tests (tests not classified under Tables 1 - 9).

On most of the tables we have entered the names of a few of the more commonly used tests of each category listed. This listing will help to clarify what we had in mind when we gave each table its title: viz., "achievement batteries," "aptitude tests," etc.

For the purposes of this survey any group test is to be considered administered on a system-wide basis if it is given to all pupils in at least one grade or to all pupils in a special type of school (like the vocational high schools). In the larger school systems, it is possible that "system-wide testing" is routinely done on a sampling basis; i.e., that city-wide statistics in the intelligence, achievement, and other areas are routinely secured from a sample of schools. If so, this sort of sampling will, for purposes of this survey, be considered system-wide testing. However, where samples are used in this way, please indicate this fact and briefly describe the sample in the spaces reserved for remarks.

As regards individual tests, like the Stanford-Binet, these will be considered given on a system-wide basis if they are administered, as a feature of a regular process of referral, to special types of pupils - as, for example, pupils who score below 70 IQ on a group test.

Please do not list in the tables themselves any tests that are not given on a system-wide basis. We would appreciate your mentioning in the spaces reserved for "remarks" any tests that are given in selected schools but not on a system-wide basis.

To complete this form, please list on each table the names of the tests used on a system-wide basis in your schools. (In many cases, the names of your tests will already be in the form.) Then indicate in the appropriate columns: (1) the grade(s) in which each test is given, (2) the months when the tests are usually given each school year, and (3) the approximate number of years that each test listed has been in use in your school system.

Please enter "None" in any table that designates a category of tests that you are not using in your school system.

TABLE 1. Achievement Test Batteries

List names of achievements tests in this table only if you give the entire battery. If you give only part of the battery list the test in Table 2.

Names of batteries	Grades in which given	Month (s) usually given	Approx. No. of years used by you
California Achievement Tests			
Cooperative General Achievement Tests			
Coordinated Scales of Attainment			
Essential High School Content Battery			
Iowa Every-Pupil Tests of Basic Skills			
Iowa Tests of Basic Skills			
Iowa Tests of Educational Development			
Metropolitan Achievement Tests			
Stanford Achievement Tests			
Others (Please write in)			

Remarks:

Table 2. **Separate Achievement Tests (Non-Battery) in Reading Readiness, Reading, English, Social Studies, Arithmetic, Mathematics, Modern Foreign Languages, Health, etc.**

Names of Tests	Grades in which given	Month (s) usually given	Approx. No. of years used by you

Remarks:

TABLE 3. Group Intelligence Tests

Name of Tests	Grades in which given	Month (s) usually given	Approx. No. of years used by you
American Council on Education			
California Test of Mental Maturity			
Henmon-Nelson Tests of Mental Ability			
Kuhlmann-Anderson Intelligence Tests			
Ohio State Univ. Psychological Tests			
Otis Self-Administering Tests of Mental Ability			
SRA Verbal Form			
Terman-McNemar Test of Mental Ability			
Lorge-Thorndike Intelligence Tests			
Others (please write in)			

Remarks:

Table 4. Aptitude Tests

Names of Tests	Grades in which given	Month(s) usually given	Approx. No. of years used by you
Differential Aptitude Test			
Psychological Corporation General Clerical Test			
Stromberg Dexterity Test			
SRA Mechanical Aptitude			
Meier Art Tests			
Musical Aptitude Test			
Others (Please write in)			

Remarks:

Table 5. `Personality, Character, and Interest Inventories

Name of Tests	Grades in which given	Month(s) usually given	Approx. No. of years used by you
The Adjustment Inventory			
California Psychological Inventory			
Mooney Problem Check List			
SRA Junior Inventory			
SRA Youth Inventory			
Kuder Preference Record-Vocational			
Occupational Interest Inventory			
Others: (Please write in)			

Remarks:

Table 6. **Individual Tests**

Names of Tests	Grades in which given	Month(s) usually given	Approx. No. of years used by you
Stanford-Binet			
Wechsler Intelligence Scale for Children			
Rorschach			
Thematic Apperception Test			

Remarks: (Please indicate how pupils are selected for individual testings.)

Table 7. **Hearing Tests**

Names of Tests	Grades in which given	Month(s) usually given	Approx. No. of years used by you

Table 8. **Vision Tests**

Names of Tests			

Remarks:

Table 9. Physical Fitness Tests

Names of Tests	Grades in which given	Month(s) usually given	Approx. No. of years used by you

Table 10. Miscellaneous Tests

Names of Tests			

Remarks:

APPENDIX B

THE USEFULNESS OF PUPIL CUMULATIVE RECORDS IN QUALITY ASSESSMENT

APPENDIX B

THE USEFULNESS OF PUPIL CUMULATIVE RECORDS IN QUALITY ASSESSMENTS*

Purpose and Procedures

To obtain a knowledge of the extent to which existing records of pupil achievement and aptitude, which are incorporated in the cumulative pupil records maintained by the schools, could be utilized for the purpose of identifying types of schools and patterns of educational progress, nine school systems were selected for study. The bases of selection were (1) length of time that sequential achievement testing had been carried out in the systems using standardized tests, (2) the span of school grades wherein tests were administered annually. Thus the nine districts were those which were revealed by the survey of testing programs to have had the longest experience in testing at each grade level over the widest span of grades.

The data for this study were the achievement and intelligence test entries on the pupil cumulative records of the seventh and the tenth grade pupils in each of the nine schools. These data were collected by photographing the portions of the pupil cumulative records which contained the test results. The analyses of these data are being carried out to obtain answers to the following questions.

1. Are there any identifiable patterns of pupil gains in the various subject areas, within school systems at the various grade levels?

2. If there are identifiable patterns within school systems by grade level to what extent do the proportions of pupils in each pattern group vary among school systems?

3. Within school systems are there are configurations of characteristics such as pupil social, ethnic and economic background, educational level or aspirations of their parents, pupil personality traits or attitudes, pupil health or physical condition, which discriminate among groups of students classified according to gain patterns and grade level?

4. To what extent do children in the various school systems who have been identified as belonging to a similar gain pattern during their elementary school experience differ in performance at the tenth grade?

5. To what extent do the differences mentioned in (4) above vary from school system to school system?

6. To what extent do the patterns of pupil gains appear to be a function of the particular batteries of tests used by the various schools?

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* Appendix B was written by Dr. John E. Bicknell.

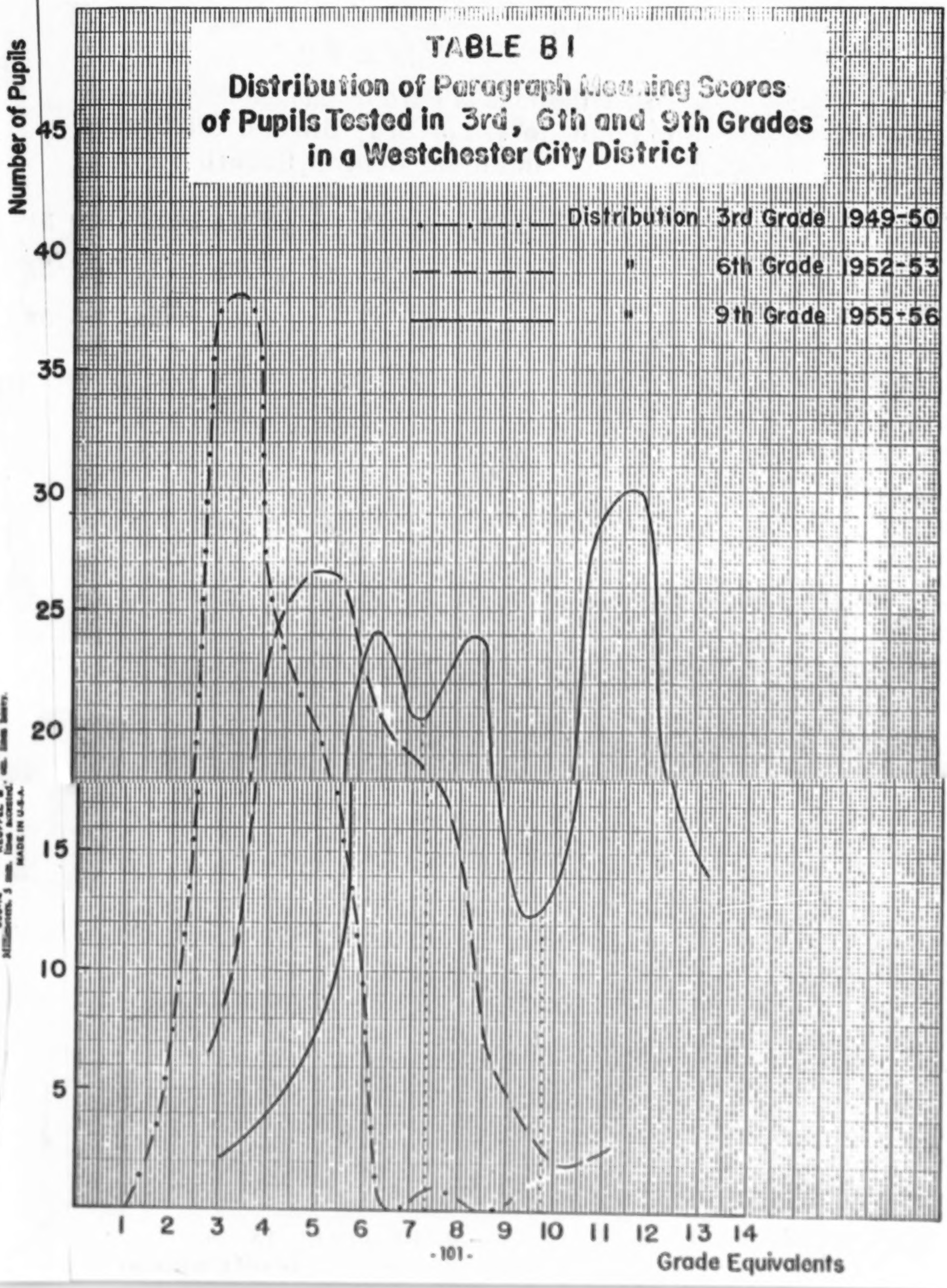

TABLE B1

Distribution of Paragraph Meaning Scores of Pupils Tested in 3rd, 6th and 9th Grades in a Westchester City District

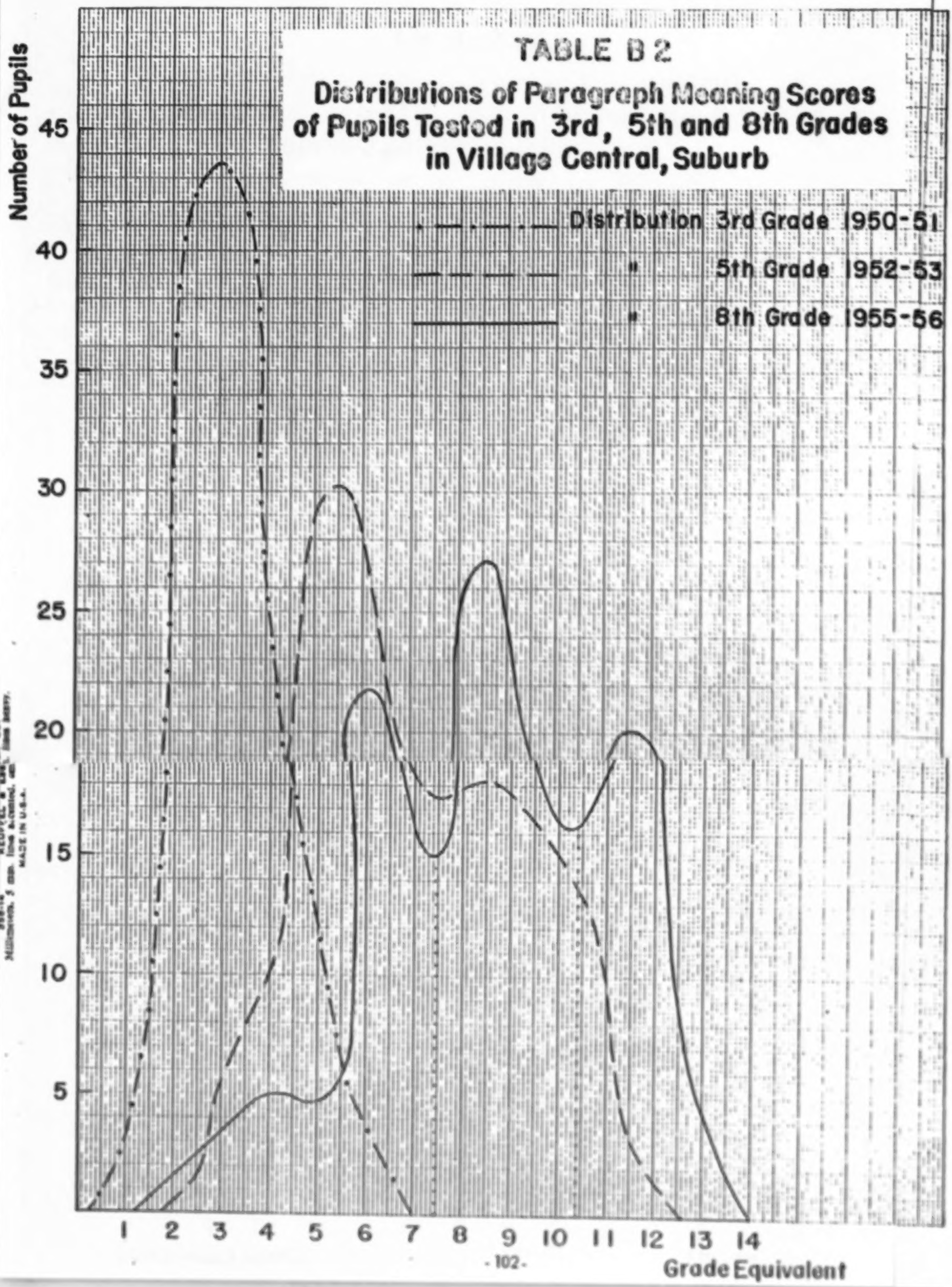

TABLE B 2

Distributions of Paragraph Meaning Scores of Pupils Tested in 3rd, 5th and 8th Grades in Village Central, Suburb

Preliminary Findings

The analyses with respect to the foregoing questions have not been completed. However, some preliminary findings may be reported at this time. To illustrate these findings, data are summarized for two school systems. School A is village central school embracing a suburban community in the capital district of New York. School B is a large city district in Westchester county. Each of these school systems had used the Stanford Achievement Test Battery throughout their school programs for many years.

A comparison of the paragraph meaning subtest score distributions shown in Table B-1 and B-2 reveals a striking similarity of shape of distribution and progression of pupil performance from year to year. However, in Table B-2 it can be seen that the progress of the children between the third and fifth grades was much greater in the capital district suburb than was the progress from the third to the sixth grade in the city district (Table B-1). The distributions of the 1955-56 school year test scores in both schools were very similar in range and form. It must be concluded that the eighth grade pupils in the capital area suburb were equivalent to the ninth grade city pupils in performance on the Stanford Achievement Test subtest for paragraph meaning.

It is of interest to note that as the groups of students progressed through both schools there was marked tendency for the range of scores to be extended upward while the lower limit of the range of scores remained relatively unchanged. Thus, in both schools a considerable number of children made little or no gain between the third and the eighth or between the third and the ninth grades, although they had never been retained in a grade more than one year.

By the eighth grade in School A and the ninth grade in School B the distributions of achievement scores had become multi-modal, indicating the presence, in each, of three distinct types of pupils. To test whether these groups corresponded to the ability level of pupils the distributions were classified into the three subgroups according to which modal group their 1955-56 scores fell into. This classification is illustrated on the exhibits by vertical dotted lines. Analyses of variance revealed that highly significant differences in performance occurred among the modal subgroups. For each pupil in each school a socio-economic score based upon fathers' occupation was obtained. In addition, there were available the following from each school: Otis Intelligence Test Scores for the year 1952-53, information on age-grade placement of pupils (i.e., young, average or old for grade), and scores on the same achievement test administered in 1952-53. Using these scores as predictors of achievement in 1955-56 in each school, analyses of covariance were carried out to determine whether the differences in performance of the modal subgroups could be accounted for by the predictor factors. When the 1955-56 performances of the modal subgroups were adjusted for differences among them on the predictor variables in combination, highly significant differences still remained. This is a definite indication that in each school three distinct types of pupils in terms of their performance had developed before the completion of junior high school. Furthermore, the differences in performance among the three types of pupils could not be accounted for by differences among them in intelligence as measured by the Otis test, socio-economic status of family, prior performance on the same test, or age-grade placement. The findings here reported with reference to the paragraph meaning scores distributions were duplicated for each of the other areas of the Stanford Achievement Test in these two schools.

To recapitulate, there appear to be three distinct patterns of pupil gain represented among the pupils of Schools A and B. There is a difference between School A and School B in the proportion of children of each type. The greatest proportion in School A is in the middle group, whereas in School B the greatest proportion is in the upper group with about equal proportions in the lower and middle groups. Although socio-economic level, age-grade placement, prior performance on the same subtest and intelligence test scores were related to these groupings, they are not sufficiently related to account entirely for the differences in performance among the groups. Therefore, some other pupil characteristics must be considered. Further research must be carried out to identify these discriminating characteristics.

Characteristics of Pupil Cumulative Records as Sources of Data

That the pupil cumulative records maintained by the schools are an unsuitable source of data for an extensive study of their pupils' progress is indicated by the experience obtained with the nine-school sample here studied. Only four of the nine schools maintained records which were suitable as sources of data. The unsuitability arose from several characteristics of the pupil records.

1. Test scores were not posted consistently. In a series of years test scores would be posted on each student's record as grade equivalents one year, raw scores the next, standard scores the next.

raw scores the next, standard scores the next.

2. There were gross inaccuracies in posting scores. In some schools pupils were used to transcribe scores to cards.

3. Subtest scores were not always posted. Instead, grade-equivalent scores for an entire test were posted.

4. In several schools no cumulative test record whatsoever was kept for pupils individually. Test scores could be obtained only from class roster sheets which were filed by grade and year.

5. Pupil cumulative records were not continuous throughout the school experience of children. In many of the schools, pupil test performance records are not forwarded from the elementary school to the junior high school. New cumulative test records are begun in the seventh grade for each pupil. Data

on the elementary test performance of pupils in the junior and senior high schools must be obtained by locating each individual's test records in the files of the elementary school which he attended.

The difficulties were so great in collecting the data for the two schools reported herein that it required 240 hours of clerical time and 60 hours of a professional worker's time to collect the information for 200 pupils in each of the two schools reported. In these two schools, photographic reproduction of the pupil records was not possible because of the unassembled nature of the records. In four schools, photographic reproduction was feasible and in three schools the records were so scattered that no attempt could be made to gather sequential pupil data.

Generally speaking, pupil cumulative records are an unsatisfactory source of data for studying the sequential development of pupils. The findings of the preliminary study are indicative of the importance of such studies in the study of the effectiveness of schools and their programs. To carry out definitive studies in this area it is necessary for the researcher to secure the sequential data in the broad areas of pupil growth and development from a widely varying selection of schools and school systems for at least five years.

APPENDIX C

THE S - D SCALES

COPY OF THE SEMANTIC DIFFERENTIAL - TYPE SCALES USED TO SECURE PUPIL - ATTITUDE TOWARD DIFFERENT SUBJECT AREAS

S-D Scales

Name____ Grade____________________

(please print last name first)

School building____________________________ School System_______________

We want to find out what a number of things mean to different students. You can quickly tell us what you think or how you feel about a lot of things by checking the list of scales in this booklet. What is a scale?

A scale looks like this:

pleasant_____:_____:_____:_____:_____ unpleasant

Here is how you use the scale:

1. First look at the word printed in capital letters at the top of the page. The first word is ART.

2. Next look at each scale.

If you think ART is real pleasant, mark it like this:

pleasant__X__:_____:_____:_____:_____ unpleasant

If you think ART is real unpleasant, mark it like this:

pleasant_____:_____:_____:_____:__X__ unpleasant

If you think ART is a little pleasant, mark it like this:

pleasant_____:__X__:_____:_____:_____ unpleasant

If you think ART is a little unpleasant, mark it like this:

pleasant_____:_____:_____:__X__:_____ unpleasant

If you think ART is neither pleasant nor unpleasant, mark it like this:

pleasant_____:_____:__X__:_____:_____ unpleasant

By putting an "X" in the right place, you can tell us just how pleasant or unplearant ART is for you.

You do the same thing for the other scales like: good - bad, fair - unfair, etc.

When you finish marking ART, go ahead and do the same for the other words like: MUSIC, SCIENCE, etc.

Work as fast as you can and still do a good job.

If you have any questions about what you are suppose to do, be sure and ask. It is alright to ask questions anytime you don't understand something.

ART

nice _____:_____:_____:_____:_____ awful

pleasant _____:_____:_____:_____:_____ unpleasant

fair _____:_____:_____:_____:_____ unfair

good _____:_____:_____:_____:_____ bad

happy _____:_____:_____:_____:_____ sad

sweet _____:_____:_____:_____:_____ bitter

MUSIC

nice _____:_____:_____:_____:_____ awful

pleasant _____:_____:_____:_____:_____ unpleasant

fair _____:_____:_____:_____:_____ unfair

good _____:_____:_____:_____:_____ bad

happy _____:_____:_____:_____:_____ sad

sweet _____:_____:_____:_____:_____ bitter

MATHEMATICS

nice _____:_____:_____:_____:_____ awful

pleasant _____:_____:_____:_____:_____ unpleasant

fair _____:_____:_____:_____:_____ unfair

good _____:_____:_____:_____:_____ bad

happy _____:_____:_____:_____:_____ sad

sweet _____:_____:_____:_____:_____ bitter

SCIENCE

nice _____:_____:_____:_____:_____ awful

pleasant _____:_____:_____:_____:_____ unpleasant

fair _____:_____:_____:_____:_____ unfair

good _____:_____:_____:_____:_____ bad

happy _____:_____:_____:_____:_____ sad

sweet _____:_____:_____:_____:_____ bitter

CITIZENSHIP EDUCATION

nice ____:____:____:____:____ awful

pleasant ____:____:____:____:____ unpleasant

fair ____:____:____:____:____ unfair

good ____:____:____:____:____ bad

happy ____:____:____:____:____ sad

sweet ____:____:____:____:____ bitter

ENGLISH

nice ____:____:____:____:____ awful

pleasant ____:____:____:____:____ unpleasant

fair ____:____:____:____:____ unfair

good ____:____:____:____:____ bad

happy ____:____:____:____:____ sad

sweet ____:____:____:____:____ bitter

PHYSICAL EDUCATION (GYM)

nice ____:____:____:____:____ awful

pleasant ____:____:____:____:____ unpleasant

fair ____:____:____:____:____ unfair

good ____:____:____:____:____ bad

happy ____:____:____:____:____ sad

sweet ____:____:____:____:____ bitter

READING

nice ____:____:____:____:____ awful

pleasant ____:____:____:____:____ unpleasant

fair ____:____:____:____:____ unfair

good ____:____:____:____:____ bad

happy ____:____:____:____:____ sad

sweet ____:____:____:____:____ bitter

APPENDIX D

THE S-E INDEX

COPY OF SOCIO-ECONOMIC INDEX INCLUDING DIRECTIONS TO PUPILS

S - E INDEX

Name ______________________________ Boy ___ Girl ___ Age ___ Grade ___

(please print last name first)

School Building ____________________ School System ______________________

DIRECTIONS: Mark your answer by putting an X in the proper box. For example, in the question, "Does your family have a car?" put an X in the box under YES if your family does have a car, and under NO if it does not. Be sure to answer all the questions.

		YES	NO
1.	Does your family have a garage or carport?	☐	☐
2.	Is there a telephone in your home?	☐	☐
3.	Do you have a bathtub in your home?	☐	☐
4.	Is your home heated with a central system, such as a furnace in the basement?..	☐	☐
5.	Does your family have a car?	☐	☐
6.	Did your mother go to high school?	☐	☐
7.	Did your mother go to a college or university?	☐	☐
8.	Did your father go to high school?	☐	☐
9.	Did your father go to a college or university?	☐	☐
10.	Do you have a fireplace in your home?	☐	☐
11.	Do you have a piano in your home?	☐	☐
12.	Do you have a desk in your home?	☐	☐
13.	Does your family have a phonograph?	☐	☐
14.	Do you have a typewriter in your home?	☐	☐
15.	Does your family have any servants such as a cook or maid?	☐	☐
16.	Does your family leave town every year for a vacation?	☐	☐
17.	Does your mother belong to any clubs or organizations, such as study, art, or civic clubs?	☐	☐
18.	Does your father belong to any civic, study, service, or political clubs, such as the Chamber of Commerce, the Lions Club, etc?	☐	☐
19.	Have you ever had private lessons in music, dancing, art, etc., outside of school?	☐	☐
20.	Do you have your own room at home?	☐	☐
21.	Does your family get a daily newspaper?	☐	☐
22.	Do you belong to any club where you have to pay dues?	☐	☐
23.	Does your family have more than 250 books? (10 shelves 3 feet long)	☐	☐
24.	Does your family own its home?	☐	☐
25.	Did your parents buy any books last year?..........	☐	☐
26.	Did your parents borrow any books from the library last year?	☐	☐
27.	Does your family get more than three magazines regularly?	☐	☐

(Turn this sheet over and continue)

APPENDIX E

THE P - T SCALE

COPY OF THE PESSIMISM - TOLERANCE SCALE FOR ASSAYING PUPIL ATTITUDE TOWARD PARENTS, ADULT AUTHORITY, AND LIFE IN GENERAL

P-T Scale

Directions: Mark your answer by putting an X in the proper box. If you agree with the statement put an X in the box under YES. If you disagree with the statement put an X in the box under NO. For example, if you believe that "Parents don't want their kids to have any fun" put an X in the box under YES but if you don't believe this, put an X in the box under NO. Answer the way you really believe--there are no right or wrong answers. Be sure to check all the statements.

		YES	NO
1.	Parents don't want their kids to have any fun	☐	☐
2.	It would be better if more parents thought less about themselves and more about their kids	☐	☐
3.	The police usually let their friends get away with things	☐	☐
4.	Most policemen can be paid off	☐	☐
5.	The way things look for the future, most people would be better off if they were never born	☐	☐
6.	There is not much chance that people will really do anything to make this a better world to live in	☐	☐
7.	Everybody is just out for himself	☐	☐
8.	Nobody really cares about anybody else	☐	☐
9.	The thing to do is to live for today rather than to try to plan for tomorrow	☐	☐
10.	Parents are always looking for things to nag their kids about.	☐	☐
11.	You're a fool if you believe what most people try to tell you	☐	☐
12.	There are many times when it's O.K. to use bad words in front of older people	☐	☐
13.	Everything parents want their kids to do is for the kid's own good	☐	☐
14.	Most of their friends would stand by them no matter what kinds of trouble they might get into	☐	☐
15.	You should always treat girls nice, even when you don't like them	☐	☐
16.	Even in the worst kind of trouble, a kid can always count on his parents to help	☐	☐
17.	Even if you can't stand some people, you should still act nice to them ..	☐	☐
18.	Parents usually understand their kids	☐	☐
19.	Most mothers play a lot with little kids	☐	☐
20.	Parents usually get along with each other	☐	☐
21.	If a kid does something good, his parents will like him better	☐	☐
22.	When a kid does something bad, his parents usually give him a chance to explain	☐	☐
23.	Most people will help you when you are in trouble..	☐	☐
24.	It is easy to talk to most people	☐	☐

APPENDIX F

1. DESCRIPTION OF THE GROWING EDGE

AN OBSERVATION GUIDE FOR IDENTIFYING CLASSROOM PRACTICES INVOLVING REAL-LIFE LEARNING SITUATIONS AND ADJUSTMENT TO INDIVIDUAL DIFFERENCES AMONG PUPILS

2. FREQUENCY DISTRIBUTION OF GROWING EDGE SCORES OF SYSTEMS PARTICIPATING IN THE QUALITY MEASUREMENT PROJECT

APPENDIX F

Description of The Growing Edge

Observation Instrument

The Growing Edge is an observation instrument developed by Paul R. Mort, William S. Vincent, and Clarence A. Newell for use in ascertaining whether selected desirable practices are in use in school systems. The practices for which systems are given credit-scores in an observation are those that, according to the authors of the Growing Edge, are indicative of the "adaptability" of a school system -- that is, of the extent to which the system has adapted itself to the use of practices which tend to capitalize the more recent findings about the psychology of learning. In specific, the practices for which credit-scores are given include: provision for pupil initiative and participation in planning learning experiences; the exploitation of life-like learning situations; emphasis upon variety in method and content; and provision for individual pupil needs, both in the classroom and also through special services requiring such personnel as guidance counselors, psychologists, speech therapists, remedial reading specialists, and the like.

Four separate scores are provided by the Growing Edge. These four areas, each defined by examples of the kinds of practices that are given credit-scores by the observer, are:

(1) Teaching Basic Skills (life-like situations and variety)

- a. Elementary Practices: Pupils correspond with men in the armed services, search for information, operate a student store, prepare graphs, do creative writing, write articles, make announcements, do choral speaking.
- b. High School Practices: Pupils use town budget data in mathematics, participate in panel discussions, locate information, skim magazines, select and read a variety of books, set up statistical tables, calculate budgets, get variety of practice in writing, participate in debates, conduct round-table discussions, are offered a variety of foreign languages.

(2) Teaching Areas of Knowledge (meaning, usefulness, and breadth)

- a. Elementary Practices: Pupils study as a result of interest in some activity. Pupils read a wide variety of books, magazines, and newspapers. Films are used frequently. Working models are used. There are organized committees and group work. Free time is provided. Well-informed community residents are called upon to speak. Pupils visit the city library. Pupils study aspects ofthe local community.

b. High School Practices: Study is related to interest and experience of students. Wide range of books is available. Pupils use pamphlets, popular magazines, films. There is independent work by pupils, organized group work, and follow-through on specified interests. Paid speakers and performers are secured. Visits are made to local business enterprises.

(3) Discovery and Development of Special Aptitudes

Elementary and High School Practices: Test results are discussed with parents. Ability of pupil is discovered through case study. Paintings are displayed. Musical groups are fostered. Assembly programs are presented by pupils. There is a variety of school clubs, sports, and group productions. Special interest rooms are available. Participation in out-of-school organizations is encouraged. Variety of courses is offered.

(4) Development of Gross Behavior Patterns

Practices: Pupils organize corporation to operate a school store. Pupils take over functions of greeting and directing visiting strangers. Conferences are held with parents. There is a summer playground program. There is student government. There are teacher-pupil conferences and teacher association with pupils on the pupils' level. Placement counseling services are available.

Considerable research with the Growing Edge is reported by Ross (1958), Ross (1951), Ross (1955), and Mort and Cornell (1941). Split-half reliabilities of .88 and .89 for the high school and the elementary school forms of the Growing Edge, respectively, are reported. Summary of the correlational studies reveal that the Growing Edge correlates approximately .55 with wealth and school expenditure factors, approximately .40 to .50 with selected staff characteristics, and approximately .30 to .45 with community population characteristics.

In the Quality Measurement Project the Growing Edge was used to secure descriptive information on variation in school practices from system to system.

The distribution of Growing Edge scores in the schools participating in the Quality Measurement Project is provided in Table F-1.

Table F-1

A Frequency Distribution of the Growing Edge Scores in Ten Groups of School Systems Classified by Type of Community and by a 5-step Socio-economic Scale

Scores	Urban-Centered					Village Cent.		Rural Cent.		Big Cities	Urban-Centered					Village Cent.		Rural Cent.		Big Cities	Urban-Centered					Village Cent.		Rural Cent.		Big Cities
	1	2	3	4	5	3	4	3	4		1	2	3	4	5	3	4	3	4		1	2	3	4	5	3	4	3	4	
	Elementary										Junior High										Senior High									
67.5 62.6													1								1									
62.5 57.6												1									1			1						
57.5 52.6																1						1	2							
52.5 47.6											1	1									1	2	1			1				1
47.5 42.6												1		1	1						2	3	2		1			1		1
42.5 37.6	1								1			1	1		2	1	1	1					1		1		3		1	1
37.5 32.6		2	1					1			2		1	2	1					3		1	1	3	3	1	1		2	2
32.5 27.6		1	1				1			1	1		2	1	1		2	1		5				2	3		1	1	1	3
27.5 22.6	2	1	2	3	1	2	1	1					1	1		1		1	1			3	1			2	3	2		1
22.5 17.6	1	3		2	1	1	1		2	4	1	3	1	3	1	2	2	1	1	1			1	2	1	1		1	2	
17.5 12.6		3	5	2	3	2	1	1	2	1		3	2		4	1	3	1	4										4	1
12.5 7.6	1	3	2	2	1	1	2	1	2	2			1	1		1			1	1			1		1					
7.5 2.6		1			6	1	2	1	2	2					2		1		1						1	1	1			
2.5 0					1		1		1						1															
Mean Scores	29.5	24.11	24.6	22.7	24.2	21.89	17.69	23.02	18.20	20.39	40.18	34.53	33.6	31.47	26.36	30.5	36.24	30.14	24.65	33.09	59.16	46.83	43.3	38.6	34.27	30.04	35.17	35.40	28.15	38.19

APPENDIX G

THE TEACHER CHARACTERISTICS SCHEDULE

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TEACHER CHARACTERISTICS SCHEDULE

Elementary
Revised Form E 54

Do not write your name on this booklet or
mark your answers in this booklet

Mark your answers on the special response
sheet provided for this purpose

Teacher Characteristics Study
Building 1K, Room 101, University of California (L.A.)

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GENERAL INSTRUCTIONS

Please read carefully

The Teacher Characteristics Schedule has been prepared to survey the experiences, activities, and preferences of teachers.

Materials included in the Schedule are presented in several different forms. Some ask questions about your preferences. Others inquire of your activities --- things you frequently do. Some of the materials are in picture form and you are asked to state whether you like or dislike a picture, or prefer one picture to another. Finally, there are statements with regard to which you are asked to indicate degree of agreement.

Each question, statement, or picture is followed by several possible choices. Your response to each question is made by marking the choice that seems to apply from the standpoint of your own experience.

Specific directions are given at the beginning of each section of the Schedule and tell you just what to do in responding to the items of that particular section.

You will not be as familiar with some of the situations and activities as with others. However, try to make your choices as though you were equally familiar with all of the experiences or activities.

Please respond to each item as you come to it. Do not omit any item.

Mark your responses on the accompanying response sheet in accordance with the directions given below.

How to Use the Response Sheet

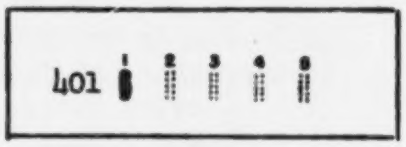
1. On the response sheet find the row numbered the same as the question or item you are responding to. Then find the pair of dotted lines numbered the same as the response you wish to choose, and blacken this space with your pencil.
2. Mark each response you choose with a SOLID BLACK PENCIL MARK.
3. Make your marks as long as the pair of dotted lines.
4. Erase completely any answers which you wish to change.
5. The following example illustrates the manner of recording a response on a separate response sheet.

Example:

401. By whom were you raised?

401-1 Both parents
401-2 Father only
401-3 Mother only
401-4 Relatives or friends
401-5 Attendants or servants

A teacher who was raised by both parents would blacken the space 401-1 on the response sheet, as shown below:



6. Do not write your name or any other identifying information on the response sheet.

Directions: For each of the following questions, mark on your answer sheet the number of the response that best applies to you. If there is no response that suits you exactly, select the answer that is best among those given so far as you are concerned.

1. Which of the following magazines do you prefer?

   1-1 American
   1-2 Harper's
   1-3 Popular Mechanics
   1-4 Liberty

2. Which of the following ways of spending a free afternoon would you enjoy most?

   2-1 Entertaining friends at a small party in your home
   2-2 Setting out new plants in your garden
   2-3 Going to hear a recital or concert
   2-4 Going to see a baseball game

3. Which of the following would you rather do?

   3-1 Play tennis
   3-2 Play softball
   3-3 Play solitaire

4. Which of the following topics would you prefer to investigate if you were going to do a piece of educational research?

   4-1 A study of curriculum trends in the local schools
   4-2 A study of present and future needs for buildings
   4-3 A study of the pupils' likes and dislikes

5. Which of the following is most nearly, or most often, true of you?

   5-1 I hate to say no to a salesman who has gone to considerable trouble for me.
   5-2 When people attempt to "put something over" on me, I try to get even by doing the same to them.
   5-3 I hate to have people instruct me about something when I know more about it than they do.

6. Which of the following do you consider most helpful as a schoolroom practice?

   6-1 Advising a pupil who gets poor grades to study harder
   6-2 Punishing pupils for talking without permission
   6-3 Allowing the classroom schedule to vary from day to day
   6-4 Maintaining the same standards of achievement for all pupils

7. Which of the following would you prefer to do?

   7-1 Plan a Christmas campaign for help for the needy
   7-2 Buy food and supplies for needy families
   7-3 Canvass for contributions to needy families
   7-4 Take Christmas baskets to needy families
   7-5 Compile statistics on the progress of a campaign for charity funds

8. If you are at the scene of a traffic accident, and there are no policemen or doctors present, which would you be most likely to do?

   8-1 Take charge of the situation and get several people to help you
   8-2 Go telephone for an ambulance
   8-3 Take no part in the activities
   8-4 Drive the injured to a hospital
   8-5 Wait until someone else takes charge, then help administer first aid

9. Which of the following novelists do you prefer?

   9-1 Charles Dickens
   9-2 Thomas Hardy
   9-3 Sinclair Lewis
   9-4 Jane Austen
   9-5 Emily Bronte

10. If you are to present a paper to your club, which of the following would you do?

    10-1 Ask competent criticism of the paper, but make only the changes you think appropriate
    10-2 Ask competent criticism of the paper, making any changes suggested
    10-3 Show the paper only to your close friends
    10-4 Feel your own judgment is good enough and not ask for criticism

11. Which of the following would you prefer?

    11-1 Taking children to a movie
    11-2 Taking children on a picnic
    11-3 Showing children through a newspaper office

12. If you had a pet dog, which of the following would you do?

    12-1 Teach it to obey commands
    12-2 Teach it many tricks to amuse yourself and your friends
    12-3 Train it as a watchdog

13. Which of the following club positions would you prefer to hold?

13-1 President
13-2 Secretary
13-3 Treasurer
13-4 Chairman, Membership Committee
13-5 Chairman, Program Committee

14. If a relative were giving a children's party, which of the following would you prefer to do?

14-1 Prepare the refreshments
14-2 Serve the refreshments
14-3 Send out the invitations
14-4 Direct the games

15. At a carnival or amusement park, which activity do you enjoy most?

15-1 The Ferris wheel
15-2 The roller coaster
15-3 The merry-go-round
15-4 The shooting gallery
15-5 The wheel-of-fortune

16. Which of the following shops would you prefer to own or manage?

16-1 Dress shop
16-2 Printing shop
16-3 Bakery
16-4 Travel Bureau

17. If you had a summer job at a public beach, which one of the following would you prefer?

17-1 Lifeguard
17-2 Manager of the bathhouse
17-3 Manager of the boat service
17-4 Ticket-taker
17-5 Head of the Lost Children's Bureau

18. If a kitten scratches you when you are playing with it, which of the following are you likely to do?

18-1 Push the kitten away and stop playing with it
18-2 Spank the kitten lightly
18-3 Ignore the scratch as an accident, and go on playing with the kitten

19. Which of the following would you prefer to do?

19-1 Build a dog kennel
19-2 Write an article about dogs
19-3 Teach tricks to a dog

20. When you were in school, which of the following qualities influenced you most in your liking for a teacher?

20-1 Neatness
20-2 Pleasing voice
20-3 Impartiality
20-4 Gentleness

21. When you were in school, which of the following qualities influenced you most in your dislike for a teacher?

21-1 Lack of a sense of humor
21-2 Impatience
21-3 Excessive preciseness
21-4 Insistence on too-high standards

22. Which of the following would you prefer to do?

22-1 Supervise a summer playground for children
22-2 Select and arrange books for the children's room in a library
22-3 Design children's clothing for a clothing manufacturer

23. Which of the following would you prefer to do?

23-1 Sort mail in a post office
23-2 Sell stamps and money orders in a post office
23-3 Collect the mail from corner mail boxes for the post office

24. In which of the following public schools would you prefer to teach?

24-1 A school in a well-to-do suburban community
24-2 A consolidated rural school in a prosperous farming territory
24-3 A small rural school in a remote mountainous section
24-4 A school in a tenement district of a large industrial city

25. Which of the following would you prefer to be?

25-1 The coach of the winning team in a debating contest
25-2 The holder of the winning ticket in a raffle
25-3 The sponsor of the winner in a student essay contest

26. Which of the following proverbs do you think contains the most truth?

26-1 Birds of a feather flock together
26-2 One shouldn't cry over spilt milk
26-3 One man's meat is another man's poison
26-4 The early bird catches the worm
26-5 Better late than never

27. Which of the following do you like best?

27-1 Thrifty people
27-2 Carefree people

28. Which of the following hobbies appeals to you most?

28-1 Amateur dramatics
28-2 Flower arrangement
28-3 Collecting butterflies
28-4 Making model airplanes

29. Which of the following jobs would you prefer to have?

29-1 A job addressing envelopes for advertisements for a large company
29-2 A job keeping correspondence files in order for a large company
29-3 A job as receptionist in the office of a large company

30. Which of the following would you prefer to do?

30-1 Tell stories to children
30-2 Draw illustrations for children's books
30-3 Invent new toys for children

31. Which of the following would you prefer to do?

31-1 Administer a typing test to applicants for a position as typist
31-2 Calculate speed and accuracy scores on the typing tests
31-3 Make minor repairs on typewriters to be used for the typing tests

32. Which of the following do you believe to be most true?

32-1 Most teachers tend to talk over the heads of their students
32-2 Most teachers are narrow-minded
32-3 Most teachers are ineffective in maintaining discipline

33. Which of the following do you consider the most serious failing in a teacher?

33-1 A severe and aloof manner
33-2 Inadequate mastery of the subject-matter to be taught
33-3 Inability to maintain a systematic and orderly approach to the work

34. Which of the following is the strongest trait in your make-up?

34-1 Accuracy
34-2 Ambition
34-3 Cheerfulness
34-4 Decisiveness

35. Which of the following is the strongest trait in your make-up?

35-1 Adaptability
35-2 Alertness
35-3 Foresight
35-4 Initiative

36. Which of the following is the strongest trait in your make-up?

36-1 Enthusiasm
36-2 Common sense
36-3 Leadership
36-4 Refinement

37. Which of the following is the strongest trait in your make-up?

37-1 Resourcefulness
37-2 Self-confidence
37-3 Thoroughness
37-4 Truthfulness

38. As a child, which of the following did you like best to do?

38-1 Take care of pets
38-2 Work in the garden
38-3 Straighten up your room

39. With which of the following statements do you most agree?

39-1 Children are morally obligated to support their parents
39-2 Parents should plan for the future so that they are not dependent on their children
39-3 People who have homes and families of their own should not have to contribute to the support of their parents
39-4 Parents should not deliberately plan to be supported by their children, but should expect and receive such help if necessary

40. Which of the following is more characteristic of the average person?

40-1 Complains and "gripes" too much
40-2 Accepts too much abuse without complaint

41. Which of the following is more true of you?

41-1 I am suspicious of people who are over-friendly
41-2 I am suspicious of people who are aloof

42. Which of the following is more true of you?

42-1 Noise and confusion bother me
42-2 Continued silence bothers me

43. Which of the following is more true of you?

43-1 I enjoy the tired feeling that comes after strenuous exercise
43-2 I don't believe in exercising too strenuously

44. At an amusement park, which of the following do you like better?

44-1 The penny arcade
44-2 The roller coaster

45. Which of the following do you like best?

45-1 Methodical work
45-2 Frequently changing activities

46. How would you prefer to spend a free Saturday?

46-1 Taking a Girl or Boy Scout troop on a hike
46-2 Taking a group of fellow-teachers for a drive in the country
46-3 Playing tennis or golf with a friend
46-4 Tinkering with a broken radio set

47. Which of the following do you think is most often the reason for a teacher's leaving the profession to engage in some other activity?

47-1 The monotony and repetition of daily classroom work gets on the nerves
47-2 Dealing with active children requires the expenditure of a great deal of energy
47-3 Higher salaries can be earned in other occupations

48. Which of the following would give you the most satisfaction?

48-1 To make a successful after-dinner speech
48-2 To find a particularly good bargain in purchasing some necessity
48-3 To make a sale to a particularly difficult customer

49. Which of the following do you think most teachers prefer to do?

49-1 Help pupils establish friendly relations with classmates
49-2 Help pupils learn the school regulations

50. Which of the following activities of the teacher do you consider the most important?

50-1 Helping pupils master subject matter
50-2 Helping pupils conform to classroom rules
50-3 Helping pupils develop a sense of responsibility

51. Which of the following activities of the teacher do you consider most important?

51-1 Taking part in community activities
51-2 Keeping up to date on educational theories and trends
51-3 Extending subject-matter knowledge by summer courses and reading

52. Which of the following do you associate with the word LEAD?

52-1 Heavy
52-2 Prospect
52-3 Officer
52-4 Road

53. Which of the following do you associate with the word COMMON?

53-1 Crass
53-2 Frequency
53-3 Taste
53-4 Mutual

54. Which of the following classes would you prefer to teach?

54-1 A class of exceptionally bright children
54-2 A class of slow and retarded children
54-3 A class of average children
54-4 A class of children of widely varying ability

55. Which kind of a story do you like most to read?

55-1 A story laid in a fashionable winter resort
55-2 A story laid in an imaginary world
55-3 A story laid in a big city

56. How many hours per week does the average teacher spend in outside preparation for classes?

56-1 Less than 3 hours
56-2 8 hours
56-3 14 hours
56-4 20 hours or more

57. In a free association test (where the individual responds with the first word that comes to his mind following the reading of some other word), which of the following words do you think most people give as their response to the word ANGER?

57-1 Fear
57-2 Glad
57-3 Hate
57-4 Happy

58. Which of the following words do you think most people give as their response to the word KIND?

58-1 Bad
58-2 Gentle
58-3 Gracious
58-4 Mean

59. Which of the following words do you think most people give as their response to the word SICKNESS?

59-1 Disease
59-2 Health
59-3 Illness
59-4 Well

60. Which of the following words do you think most people give as their response to the word BAD?

60-1 Good
60-2 Mischief
60-3 Sad
60-4 Terrible

61. Suppose a pupil brought you a paper at the beginning of a period saying, "I wrote a story last night. Can you look at it now?" What would you be most likely to say?

61-1 "I'll take it and look at it when I finish the assignment."
61-2 "Of course. It's nice you like to write stories."
61-3 "I can't right now. Class is beginning."
61-4 "Why certainly, I'd like to very much."

62. How many students does the average teacher send to the principal's office per month for disciplinary action?

62-1 1 student
62-2 3 students
62-3 5 students
62-4 10 or more students

63. About what percent of high school students intentionally try to tax the patience of the teacher?

63-1 Less than 1%
63-2 15%
63-3 40%
63-4 60%

64. About what percent of high school classes are literally almost impossible to control?

64-1 0%
64-2 5%
64-3 15%
64-4 25%

65. About what percent of teachers feel that effective control of students in classes can be achieved by making each class itself completely responsible for such control?

65-1 10%
65-2 30%
65-3 50%
65-4 70%
65-5 90%

66. An idea for an invention occurs to X. He works several months at the construction of an operating model. At the end of that time the device, for some indeterminable reason, still does not work. What do you think you would do if you were X?

66-1 Take the device to another inventor and ask his advice and aid
66-2 Forsake your inventive "fling" and leave such problems to a research laboratory
66-3 Continue your work on the problem and try to develop another model that will work
66-4 Write-off the idea as "just a brain storm" and forget it

67. Which of the following stories would you like most to read?

67-1 A story laid in a coal field
67-2 A story laid at a fashionable summer resort
67-3 A story laid in a film studio

68. About what percent of high school pupils are "wholesome" and good to have in class?

68-1 10%
68-2 40%
68-3 60%
68-4 95%

69. What kind of a novel would you like most to read?

69-1 An historical novel
69-2 A novel written about the present
69-3 A novel about life in the year 2500

70. About what percent of high school classes are disruptive in that the students frequently "get off the subject" either intentionally or unintentionally?

70-1 5%
70-2 25%
70-3 45%
70-4 65%

71. When you read something that is interesting and that you would like to remember, what do you usually do?

71-1 Try to think of it later to see if you can recall it
71-2 Make notes or mark the passage, and reread the material
71-3 Depend upon the original reading to fix the material in mind
71-4 Mark the passage with a view to returning to it at some later time if possible

72. What percent of teachers believe they should have some voice in making administrative decisions?

72-1 40%
72-2 55%
72-3 80%
72-4 95%

73. About what percent of teachers really like to take a personal interest in the individual students in their classes?

73-1 10%
73-2 40%
73-3 50%
73-4 60%
73-5 90%

74. Suppose you pick up a newspaper and, to pass the time, begin filling in the words of the crossword puzzle. Which of the following is most like your approach to the puzzle?

74-1 Give the puzzle the "once over" filling in the words that seem the easiest without trying the more difficult parts
74-2 Fill in words systematically until the novelty wears off; then stop
74-3 Use a dictionary to look up the words that do not come to you at once
74-4 Build the words systematically until the puzzle is completed, using the dictionary as little as possible

75. About what percent of high school students possess irritating nervous mannerisms?

75-1 Less than 1%
75-2 10%
75-3 30%
75-4 40%
75-5 50%

76. About what percent of high school students have difficulty in conforming to the requirements for serious systematic study?

76-1 Less than 1%
76-2 20%
76-3 40%
76-4 60%
76-5 90%

77. Suppose a pupil in your class asked, "What is an atom bomb anyway?" What would you be most likely to say?

77-1 "It is a weapon which is very powerful, but we have learned a lot from it that can help now."
77-2 "It consists of materials that when brought together actually explode the molecule."
77-3 "That's something we can read about and then discuss it this afternoon."
77-4 "Who knows what a bomb is? An atom?"
77-5 "Why don't you look it up in the encyclopedia?"

78. Suppose a pupil in your room said, "I forgot my lunch today." What would you be most likely to say?

78-1 "Are you close enough to go home for lunch?"
78-2 "I'll give you some money, but you must bring it back tomorrow and try to remember after this."
78-3 "Is it your job to see that you take it each morning? Let's try to remember next time."
78-4 "Since this is the first time this has happened, I will give you some money to buy your lunch."
78-5 "Will a quarter be enough for your lunch in the cafeteria?"

79. About what percent of high school students are dependable?

79-1 10%
79-2 40%
79-3 60%
79-4 90%

80. About what percent of high school teachers develop original ways of presenting course materials (exercises demonstrations, etc.)?

80-1 1%
80-2 10%
80-3 40%
80-4 75%

81. About what percent of the credit for "good discipline" should be accorded to the teacher?

81-1 10%
81-2 40%
81-3 60%
81-4 90%

82. Do you think the average teacher

82-1 has enough energy to meet the demands of his or her job?
82-2 usually finds his energy exhausted before all demands have been met?

83. Do you believe the average person who has undertaken a special job requiring several days for completion

83-1 feels considerable tension that makes it difficult to relax completely until the job is completed?
83-2 accepts it as a matter of course and still is able to relax easily during the course of the work?

84. About what percent of people do you feel are influenced in their opinions and attitudes towards others by feelings of jealousy?

84-1 10%
84-2 40%
84-3 60%
84-4 80%

85. About what percent of people do you feel are generally able to keep their emotions under good control?

85-1 10%
85-2 30%
85-3 60%
85-4 90%

86. What percent of teachers do you think suffer from stomach trouble (including ulcers) brought on by unusual tensions related to their work?

86-1 5%
86-2 25%
86-3 40%
86-4 60%

87. About what percent of people do you feel are inclined to worry more than they should?

87-1 10%
87-2 40%
87-3 60%
87-4 90%

88. About what percent of parent's visits are made to criticize the teacher or the school?

88-1 10%
88-2 30%
88-3 50%
88-4 70%

89. What percent of people do you feel are rather seriously annoyed by persons who do not observe good manners?

89-1 10%
89-2 40%
89-3 60%
89-4 90%

90. About what percent of people do you feel stop to think about the consequences of their acts as they affect their associates?

90-1 10%
90-2 40%
90-3 60%
90-4 90%

91. When teachers send students to the principal's office, in what percent of the cases is the teacher at fault rather than the student?

91-1 10%
91-2 30%
91-3 50%
91-4 60%
91-5 80%

92. Which one of the following qualities do you think it is most important for a teacher to possess?

92-1 Friendliness
92-2 Ability to provoke the students to think
92-3 Resourcefulness and versatility
92-4 Enthusiasm

93. About what percent of high school teachers feel that they should not have to spend any time on yard duty and similar duties?

93-1 10%
93-2 50%
93-3 75%
93-4 95%

94. Which of the following qualities do you think it is most important that a teacher possess?

94-1 Good taste
94-2 Conscientiousness
94-3 Consistency of action and policy
94-4 Self-possession and dignity

95. About what percent of teachers willingly assume their full share of extra duties in the school?

95-1 10%
95-2 30%
95-3 50%
95-4 80%

96. Which of the following do you think is most indicative of a poor class?

96-1 Students who are listless or conforming dully
96-2 Disorderliness and noise
96-3 Hesitancy and unsureness on the part of the student
96-4 Dependency of students; reliance on teacher and others for suggestions or directions

97. About how many hours a day do you think a teacher should expect to devote to pupil assistance (outside of regularly scheduled class work)?

97-1 0 hours
97-2 1 hour
97-3 2 hours
97-4 3 hours
97-5 4 or more hours

98. How many hours a day should an experienced teacher expect to devote to preparation of the planning for class work?

98-1 0 hours
98-2 1 hour
98-3 2 hours
98-4 3 hours
98-5 4 or more hours

99. Suppose you found two children in your class talking during a period for quiet study. One of the children defended the action by saying, "I was only talking to Marian about her arithmetic." What would you be most likely to say?

99-1 "After this, if you have any questions, ask me."
99-2 "It's nice of you to help."
99-3 "Let's do our own arithmetic."
99-4 "See if you can lower your voices."
99-5 "That's good, but maybe you could do it after class."

100. A boy who is suspected of breaking a window said, "It wasn't my fault the rock broke the window." What would you be most likely to say?

100-1 "What did happen?"
100-2 "What do you think you would do about it?"
100-3 "Whose fault was it?"
100-4 "You probably didn't mean to break the window, but you shouldn't throw rocks on the school grounds."
100-5 "You shouldn't have been throwing rocks."

101. Suppose you had all the materials out for clay modeling and one child said, "We'd rather paint a mural instead of making a clay model." What would you be most likely to say?

101-1 "Let's plan a mural and do it, too."
101-2 "All right. Let's make a mural next."
101-3 "But the group has decided to make the model!"
101-4 "Why didn't you suggest that when we were planning?"
101-5 "Let's talk it over and decide what the class would like."

102. Suppose another teacher brought in three of your boys, saying, "These boys were running in the halls!" What would you be most likely to say?

102-1 "Boys, you know we are not supposed to run in the halls."
102-2 "Did you know you could have seriously hurt someone?"
102-3 "I'm glad you brought this to my attention."
102-4 "Thank you. Boys, what do you think we should do about this?"
102-5 "Thank you. Since this is the first time perhaps they have some reasons to give."

103. Suppose another teacher said to you, "John never does anything right. Did you ever have a child like that?" What would you be most likely to say?

103-1 "I've had some that were pretty difficult, but they improve gradually."
103-2 "No, I haven't. Everyone has something he can do well."
103-3 "John certainly doesn't impress me that way."
103-4 "Some children don't seem to want to conform; that's so."
103-5 "There are always some in every class."

104. Suppose another teacher said, "Why have lesson plans? You can't follow them anyway." What would you be most likely to say?

104-1 "But you should have some idea what you are going to do."
104-2 "How can you say that? By making plans you organize your work."
104-3 "Maybe not exactly, but an outline will help in planning."
104-4 "No, but they are very useful to depart from."
104-5 "No, you certainly can't follow them exactly."

105. Suppose a circus parade passed the window while you were presenting an arithmetic lesson. What would you be most likely to say?

105-1 "If you stay in your seats we can all take a look out the window at the parade."
105-2 "Is there anyone who feels he is not grown up enough so that the parade will not bother him while we have our arithmetic?"
105-3 "How many of you would like to watch the parade? Let's count the different things we see."
105-4 "Let's all stop a moment and look out the window; let's use our eyes and not our lips."
105-5 "Would you like to watch the circus parade for awhile?"

106. Which of the following jobs would you most like?

106-1 Being a sales clerk
106-2 Handling complaints
106-3 Preparing customer's bills

107. If a pertinent question occurs to you when attending a public lecture, which of the following are you likely to do?

107-1 Ask the question in the discussion period after the lecture
107-2 See the speaker later to ask the question
107-3 Not ask the question at all

108. Which of the following would you like most to be?

108-1 A judge
108-2 An actress or actor
108-3 A musician

109. Approximately what per cent of fourth-grade pupils do some form of art work as one of their home leisure-time activities?

109-1 5%
109-2 10%
109-3 25%
109-4 50%
109-5 75%

110. About how many feet can the typical nine year old child swim?

110-1 Less than 5 ft.
110-2 15 ft.
110-3 25 ft.
110-4 50 ft.
110-5 150 ft. or more

111. About how many "tricks" has the typical dog been taught to perform?

111-1 None
111-2 2
111-3 5
111-4 7
111-5 10 or more

112. A party has been announced for 8:00 p.m. About what time do you think most of the guests would be likely to arrive?

112-1 Before 8:00 p.m.
112-2 8:00 - 8:05 p.m.
112-3 8:15 - 8:20 p.m.
112-4 8:30 - 8:35 p.m.
112-5 8:45 - 8:50 p.m.

113. About how many schools for the deaf are there in the United States?

113-1 20
113-2 35
113-3 60
113-4 85
113-5 175

114. In planning an informal luncheon for a visitor, what do you think might be a desirable number of guests to invite?

114-1 4
114-2 8
114-3 12
114-4 16
114-5 20

115. Approximately how many children of school age (ages 5 - 18) are there in the United States?

115-1 3,000,000
115-2 10,000,000
115-3 25,000,000
115-4 50,000,000
115-5 70,000,000

116. Which of the following topics would you be least likely to choose to investigate if you were going to do a piece of educational research?

116-1 A study of curriculum trends in the local schools
116-2 A study of present and future needs for buildings
116-3 A study of the pupils' likes and dislikes

117. Which of the following would you least like to have your friends consider you?

117-1 Industrious
117-2 Systematic
117-3 Goodhearted
117-4 Cultured

118. Which of the following would you like least to do?

118-1 Take children to a movie
118-2 Take children on a picnic
118-3 Show children through a newspaper office

119. If a relative were giving a children's party, which of the following would you least like to do?

119-1 Prepare the refreshments
119-2 Serve the refreshments
119-3 Send out the invitations
119-4 Direct the games

120. If you had a summer job at a public beach, which of the following would you least like?

120-1 Lifeguard
120-2 Manager of the bathhouse
120-3 Manager of the boat service
120-4 Ticket-taker
120-5 Head of the Lost Children's Bureau

121. Which of the following would you least like to do?

121-1 Advise people regarding personality improvement
121-2 Catch rare animals for a museum
121-3 Cash checks for people

122. Which of the following activities of the teacher do you consider least important?

122-1 Helping pupils master subject matter
122-2 Helping pupils conform to classroom rules
122-3 Helping pupils develop a sense of responsibility

123. If you were writing a paper to be presented at a study-club meeting, which of the following topics would you be least likely to choose?

123-1 "Do Comic Books Contribute to Juvenile Delinquency?"
123-2 "Does Australia Offer Greater Economic Opportunity than the United States?"
123-3 "Will Science Ever Be Able to Create Life?"

124. Which of the following stories would you least like to read?

124-1 A story about the coal fields
124-2 A story about a fashionable summer resort
124-3 A story about a film studio

125. In which of the following public schools would you least like to teach?

125-1 A school in a well-to-do suburban community
125-2 A consolidated rural school in a prosperous farming territory
125-3 A small rural school in a remote mountainous section
125-4 A school in the tenement district of a large industrial city

126. Which of the following would you least like to do?

126-1 Read about exploration in Africa
126-2 Read about peculiarities of human behavior
126-3 Read about new styles in clothing

127. Which of the following do you least like?

127-1 To have just a few friends and acquaintances
127-2 To have many people come to you for advice
127-3 To be very active socially

128. Which of the following would you least like to read about?

128-1 How to keep in good health
128-2 Interesting places in Europe
128-3 Why people laugh

129. Which of the following would you dislike the most?

129-1 Teaching public speaking
129-2 Writing short stories
129-3 Being a member of state legislature

130. Which of the following would you like least?

130-1 Being the president of a large industrial concern
130-2 Being a scientist
130-3 Being a prince or princess

131. Which of the following would you least like to do?

131-1 Build a dog kennel
131-2 Write an article about dogs
131-3 Teach tricks to a dog

132. Which of the following would you least like to do?

132-1 Supervise a summer playground for children
132-2 Select and arrange books for the children's room in a library
132-3 Design children's clothing for a clothing manufacturer

133. Which of the following would you least like to do?

133-1 Sort mail in a post office
133-2 Sell stamps and money orders in a post office
133-3 Collect the mail from corner mail boxes for the post office

134. Which of the following proverbs do you think contains the least truth?

134-1 Seeing is believing.
134-2 You can't get blood out of a turnip.
134-3 A new broom sweeps clean.
134-4 A friend in need is a friend indeed.
134-5 All that glitters is not gold.

135. In which of the following occupations would an outstandingly successful woman teacher be least likely to succeed?

135-1 Newspaper reporter
135-2 Actress in radio serials
135-3 Registered nurse
135-4 Accountant for a business firm

136. Which of the following would you least like to do?

136-1 Tell stories to children
136-2 Draw illustrations for children's books
136-3 Invent new toys for children

137. Which of the following do you consider to be the least important failing in a teacher?

137-1 A severe and aloof manner
137-2 Inadequate mastery of the subject matter to be taught
137-3 Inability to maintain a systematic and orderly approach to the work

138. Which of the following is the weakest trait in your make-up?

138-1 Accuracy
138-2 Ambition
138-3 Cheerfulness
138-4 Decisiveness

139. Which of the following is the weakest trait in your make-up?

139-1 Adaptability
139-2 Alertness
139-3 Foresight
139-4 Initiative

140. Which of the following is the weakest trait in your make-up?

140-1 Resourcefulness
140-2 Self-confidence
140-3 Thoroughness
140-4 Truthfulness

141. Which of the following do you admire most?

141-1 Florence Nightingale
141-2 Madame Curie
141-3 Sarah Bernhardt
141-4 Margaret Sanger
141-5 Queen Victoria

142. Which one of the following words do you associate with the word BRAVE?

142-1 Fight
142-2 Honor
142-3 Protect
142-4 Soldier
142-5 Fair

143. When you plan your future activities, which of the following is most attractive to you?

143-1 Owning a home of my own
143-2 Rearing my children
143-3 Spending a year in travel
143-4 Developing skill in an avocation
143-5 Getting ahead in my profession

144. With which of the following statements are you most strongly in agreement?

144-1 The American custom for autos to pass to the right is more logical than the English custom of passing to the left.
144-2 Cleanliness is a more valuable human trait than curiosity.
144-3 It is necessary to have a college education in order to be successful in most lines of business.
144-4 Three meals a day will always be the best general rule.
144-5 An artist should be free to choose his own mode of expression without considering the preference of others.

145. Which of the following most clearly resembles a description of your dreams?

145-1 Familiar scenes and old acquaintances
145-2 Bright colors and motion
145-3 New places and strange faces
145-4 Dramatic situations
145-5 Situations that are repeated from previous dreams

146. Which of the following is most likely to bring tears to your eyes?

146-1 Listening to beautiful music
146-2 Attending a wedding
146-3 Watching a sad scene in a moving picture
146-4 Saying goodbye to a dear friend, who is to be gone a long time
146-5 Receiving the news of a friend's death

147. At what time of day do you usually feel most fit?

147-1 Early morning
147-2 Late morning
147-3 Early afternoon
147-4 Late afternoon
147-5 Evening

148. Which of the following do you think is most indicative of a good class?

148-1 Courtesy of the students to the teacher and to each other
148-2 Attentiveness of the students
148-3 Willingness of the students to try and to volunteer
148-4 Students who are well prepared for the class meeting

149. When someone you know is bereaved, which of the following do you prefer to do?

149-1 Send flowers and a brief note
149-2 Write a letter
149-3 Make a personal call

150. Which of the following statements do you least agree with?

150-1 Children are morally obligated to support their parents.
150-2 Parents should plan for the future so that they are not dependent on their children.
150-3 People who have homes and families of their own should not have to contribute to the support of their parents.
150-4 Parents should not deliberately plan to be supported by their children, but should expect and receive such help if necessary.

Directions

In this section you are to express your reactions to a number of pictures, following three different sets of directions, Directions I, II, and III.

Directions I:

Look at picture number 151 very briefly. Then, find item number 151 on the answer sheet. If you like picture number 151, blacken the first space (response 151-1) on the answer sheet. If you dislike picture number 151, blacken the second space (response 151-2) on the answer sheet. Then go on to the other pictures, looking at one at a time and indicating whether you like it or dislike it. For each one, blacken the first space after the corresponding number on the answer sheet if you like the picture. Blacken the second space if you dislike the picture.

Do not judge critically the "artistic quality" of the pictures--simply note your first-glance response of like or dislike for each picture.

Go all the way through the 56 pictures before starting on Directions II.

Directions II:

When you have completed all pictures under Directions I, turn back again to the beginning of the picture section. Note that the pictures are arranged in pairs. Drawings 151 and 152 are printed side by side; so are drawings 153 and 154; 155 and 156; etc.

Look at each pair of pictures. Decide which picture of the pair you like best.

Then, find on the answer sheet the number of the picture you like best. Blacken the third space (response 3) following that number on the answer sheet.

Note that space 3 is to be marked only for the picture you like best in each pair. For the other picture of that pair, space 3 is left blank.

For example: If you like picture 157 better than picture 158, you should mark response 157-3 and leave response 158-3 blank.

Be sure to make a choice for each pair of pictures. Go all the way through the 56 pictures before starting Directions III.

Directions III:

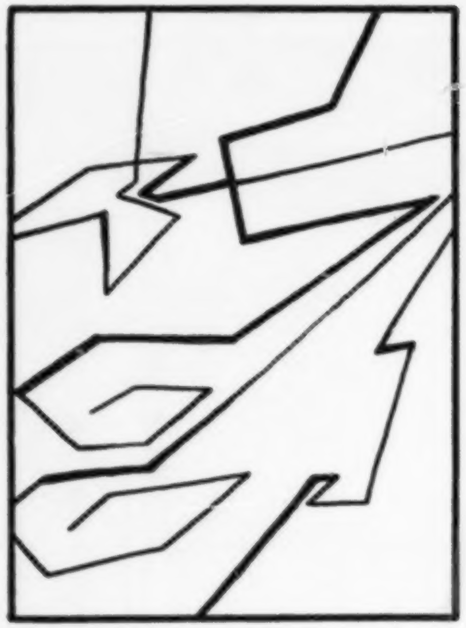
When you have completed all pictures under Directions II, again turn back to the beginning of this picture section.

This time decide which picture of each pair you think the typical pupil (at the grade level you teach or plan to teach) would like best.

Find on the answer sheet the number of that picture and blacken the fourth space (response 4) following that number on the answer sheet.

Space 4 should be marked only for that picture in each pair that you think would be preferred by the typical pupil.

Go all the way through the 56 pictures.



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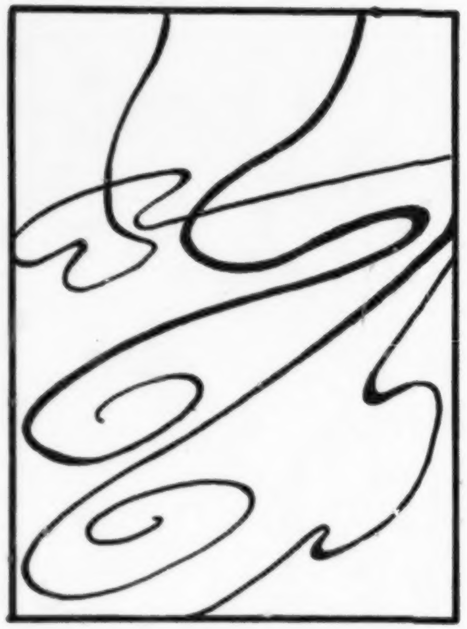

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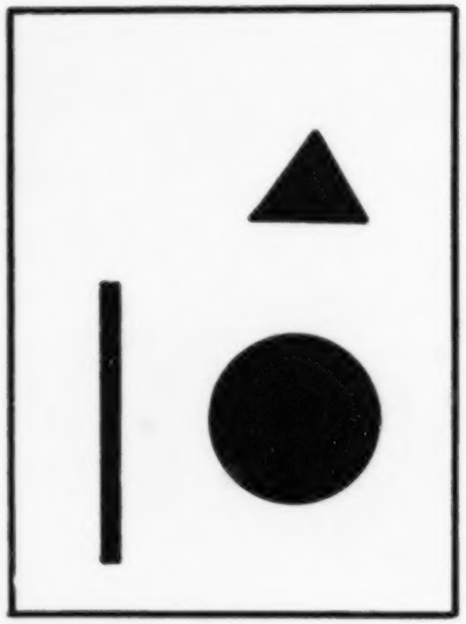

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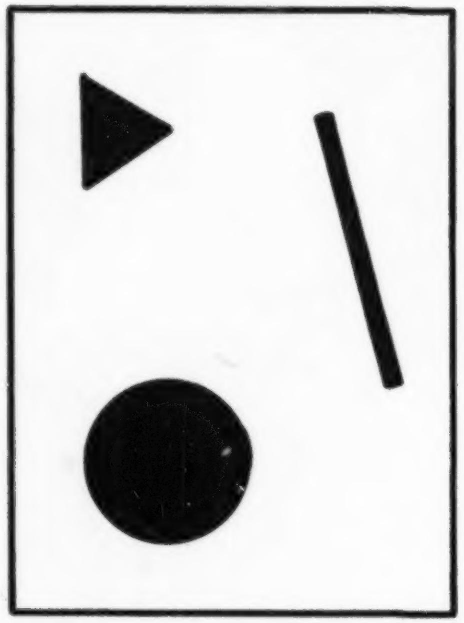

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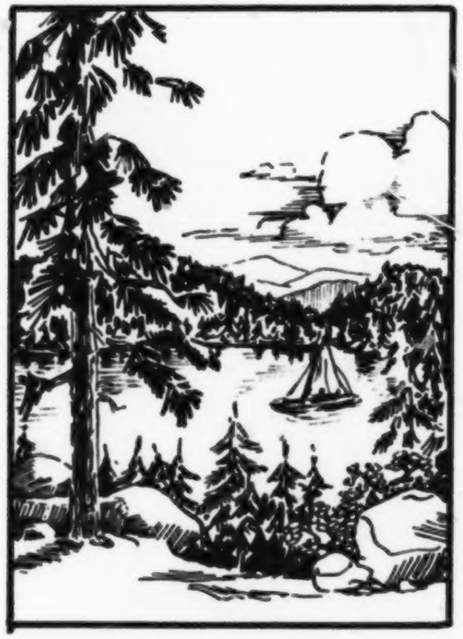

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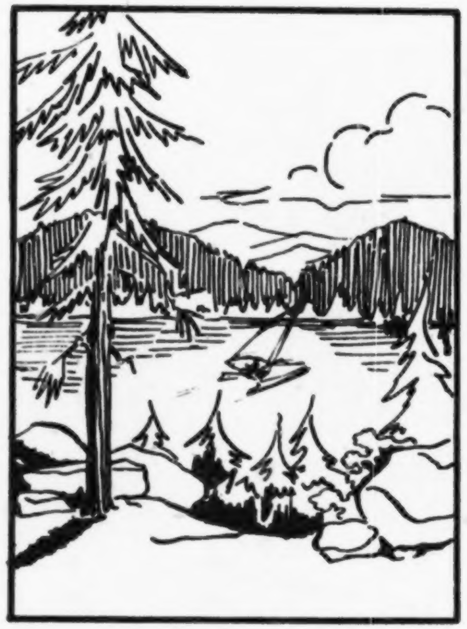

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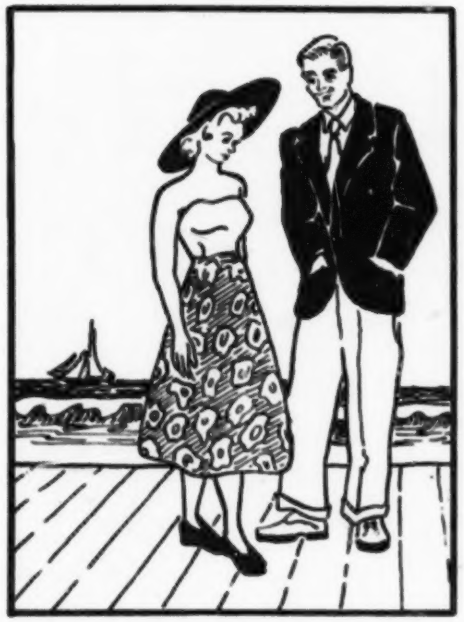

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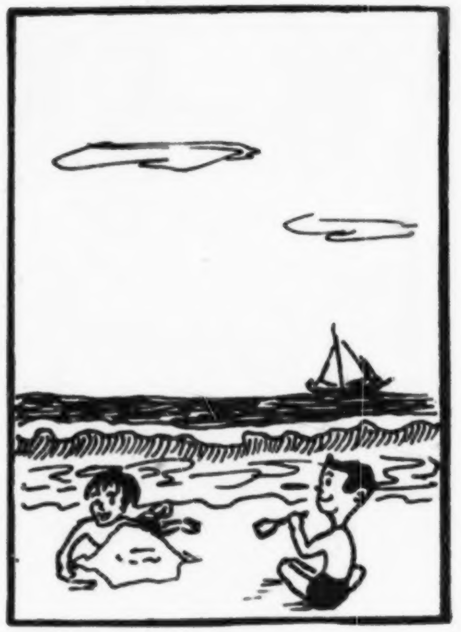

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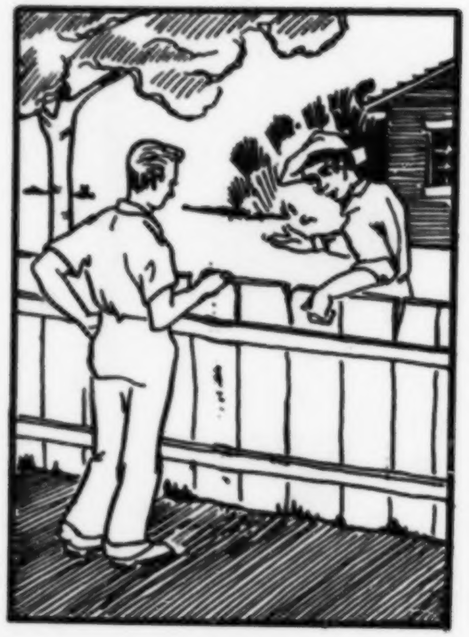

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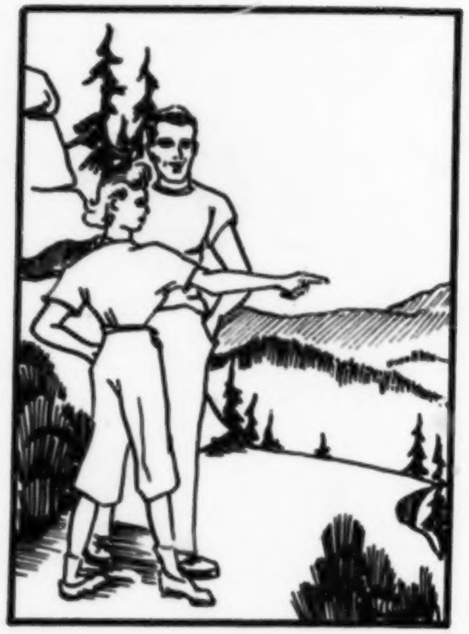

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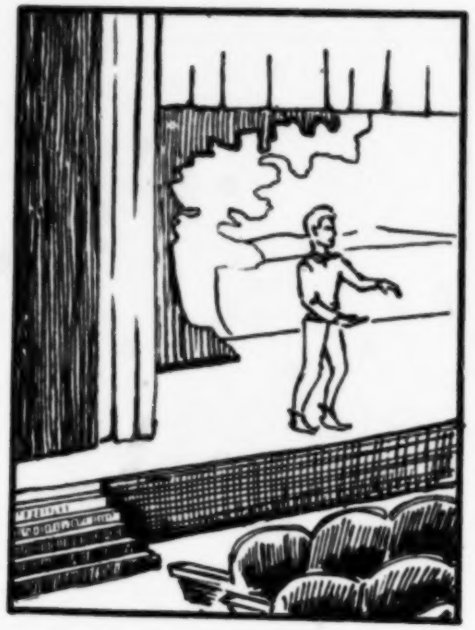

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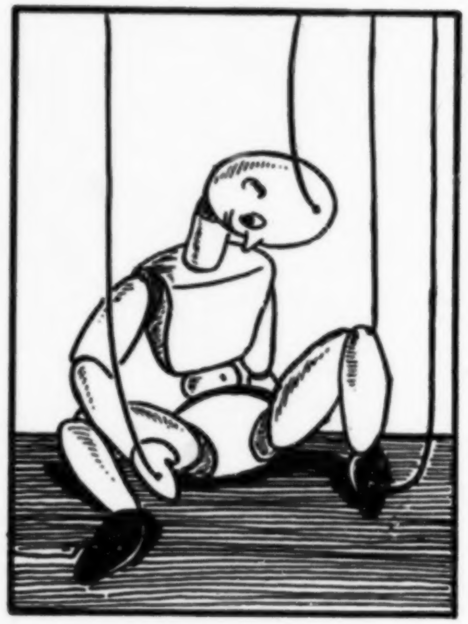

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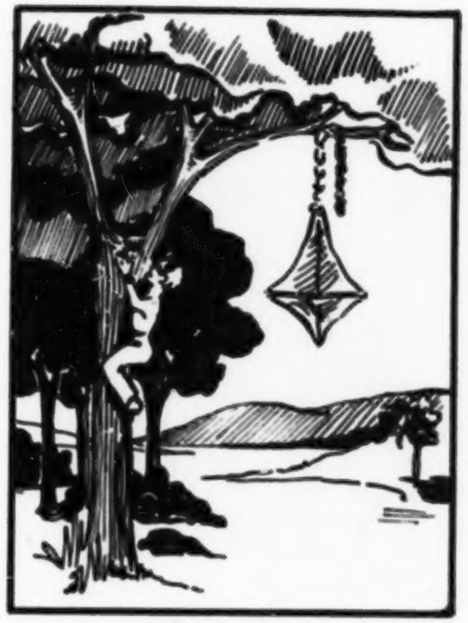

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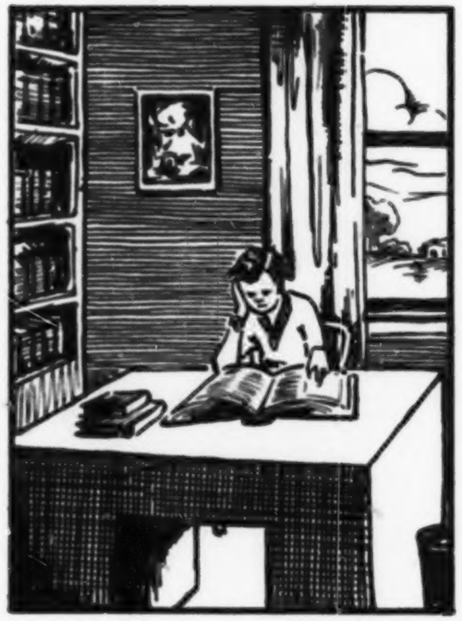

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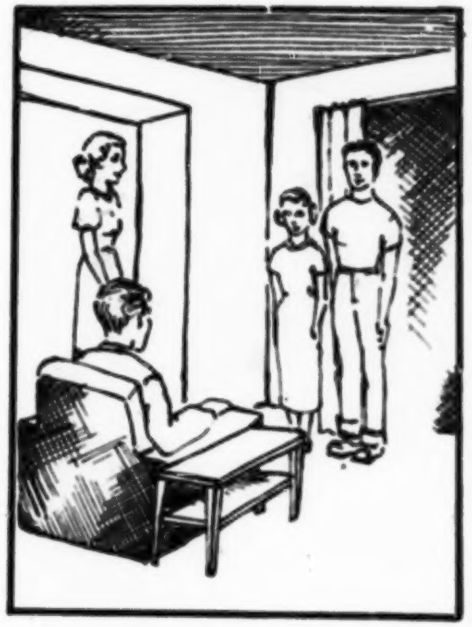

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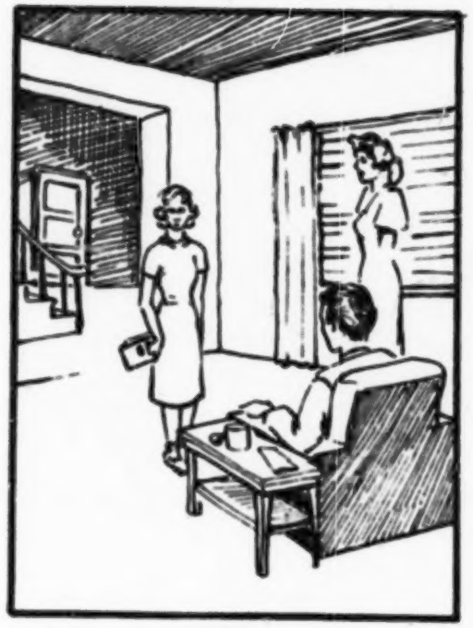

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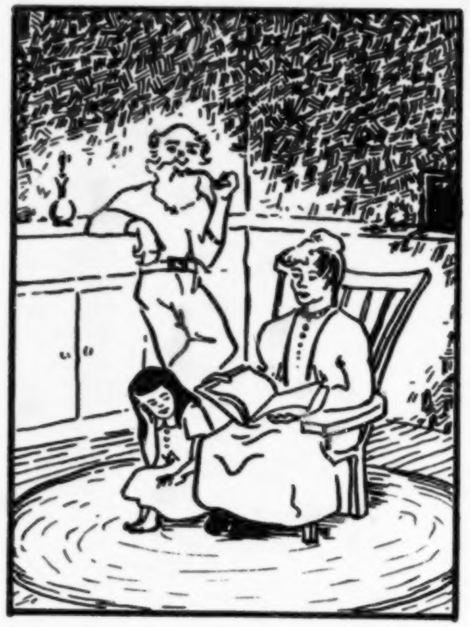

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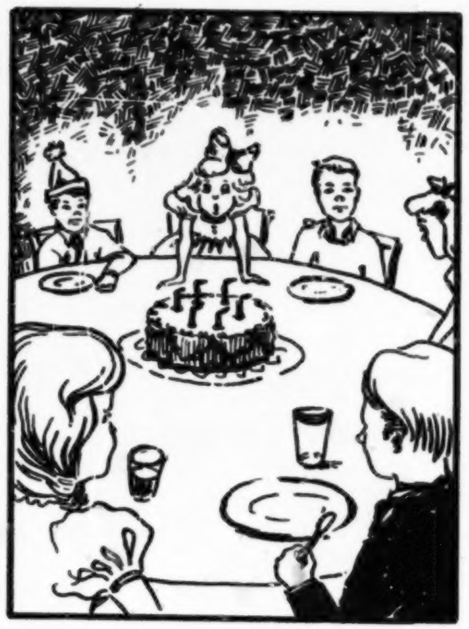

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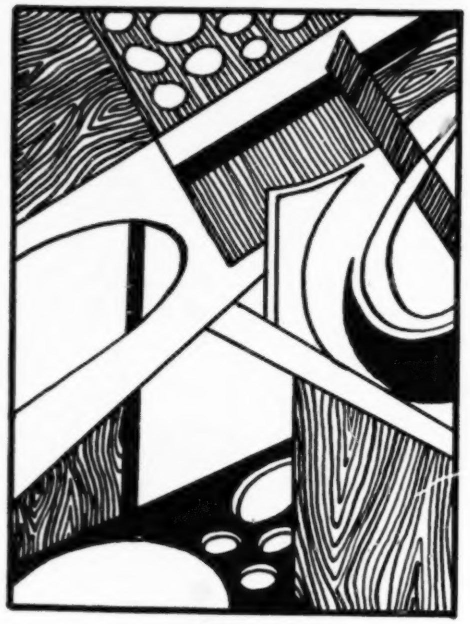

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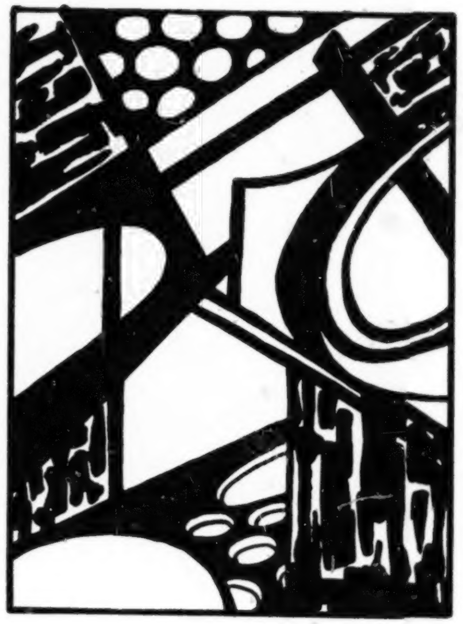

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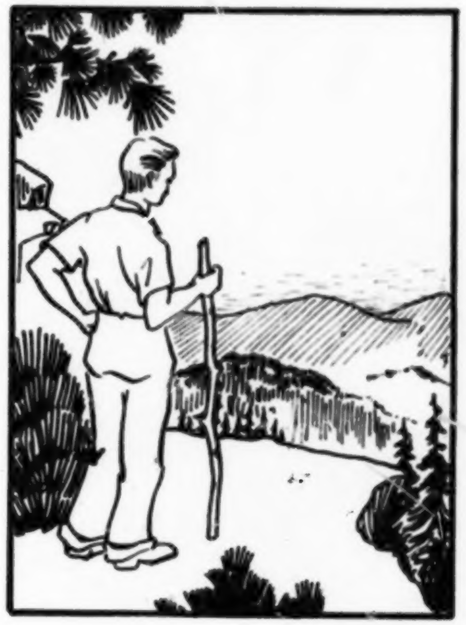

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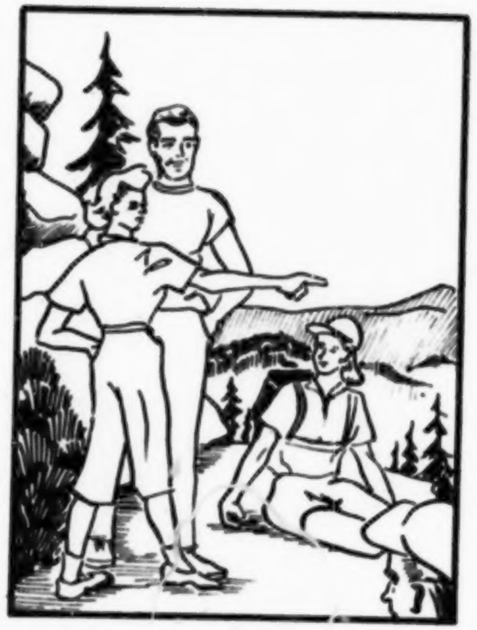

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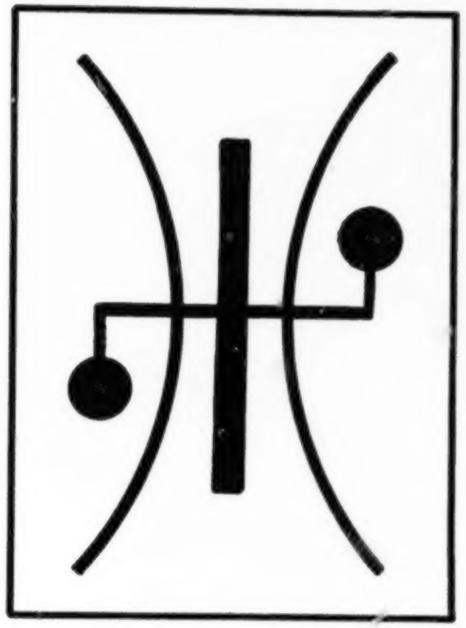

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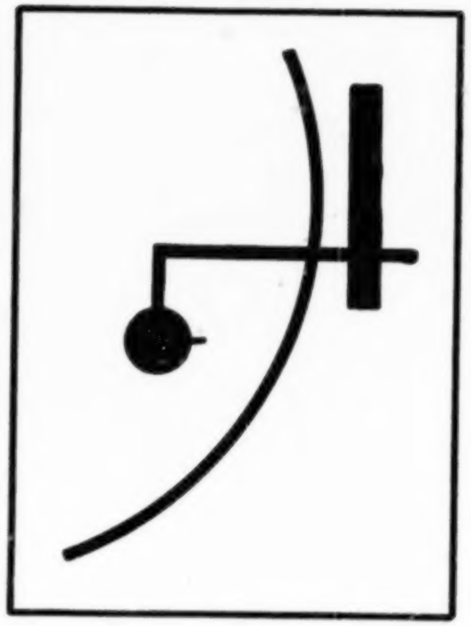

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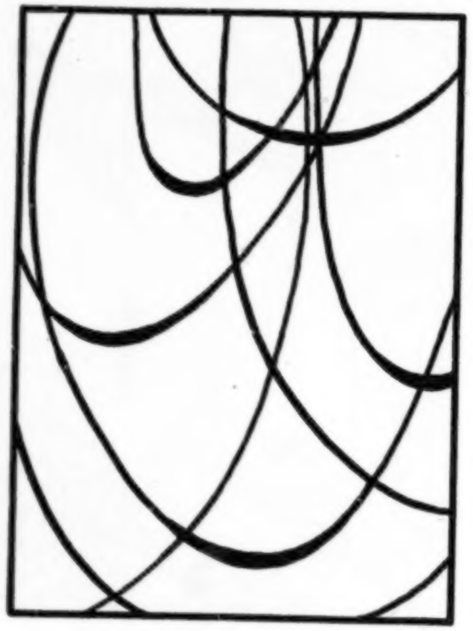

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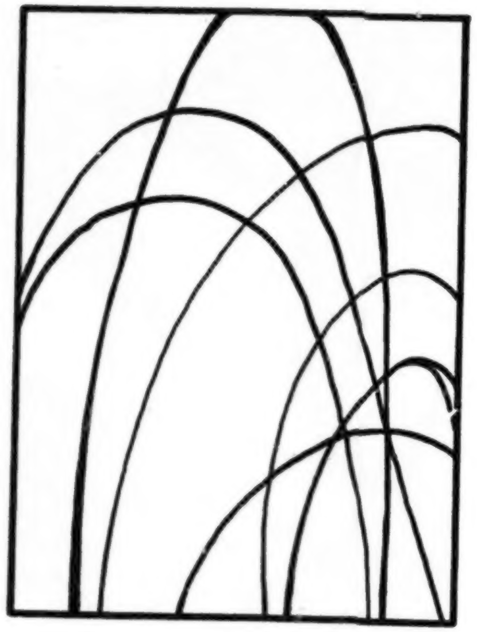

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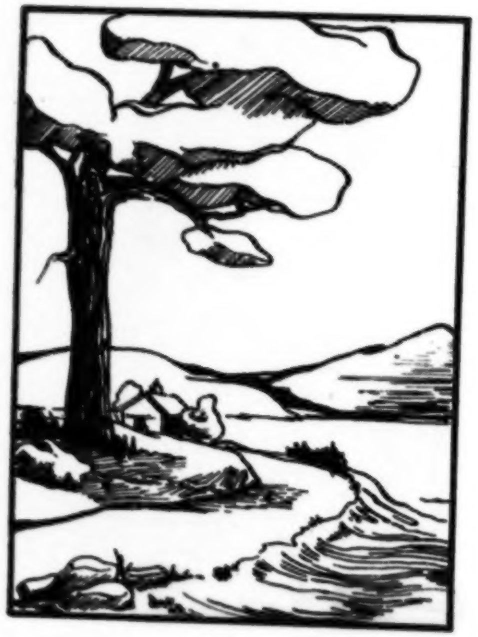

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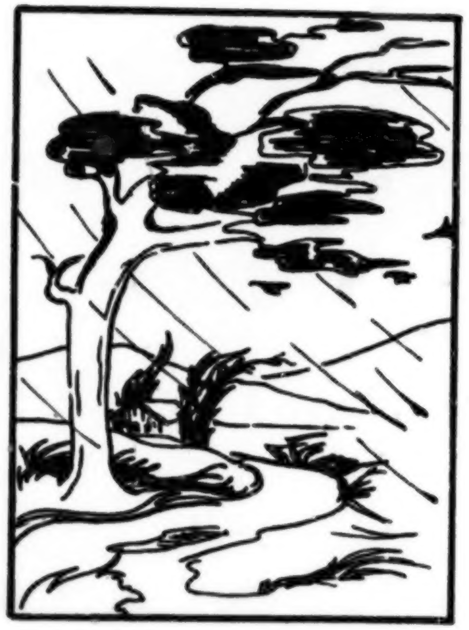

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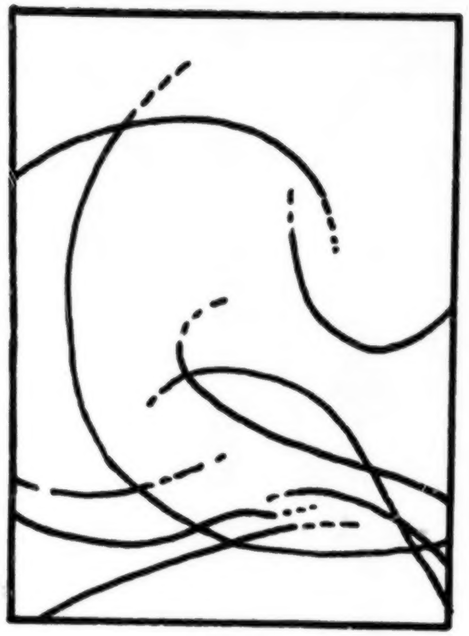

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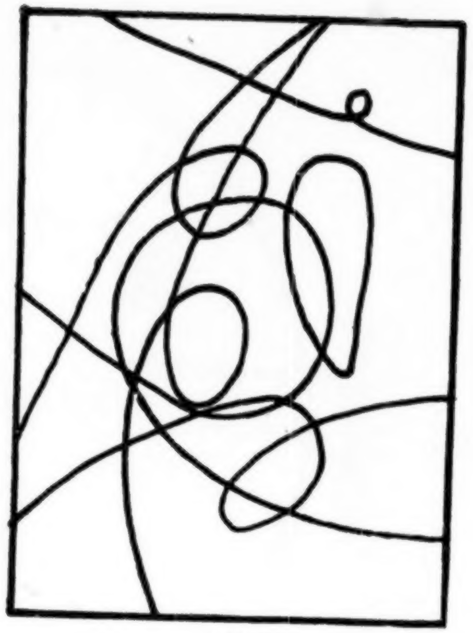

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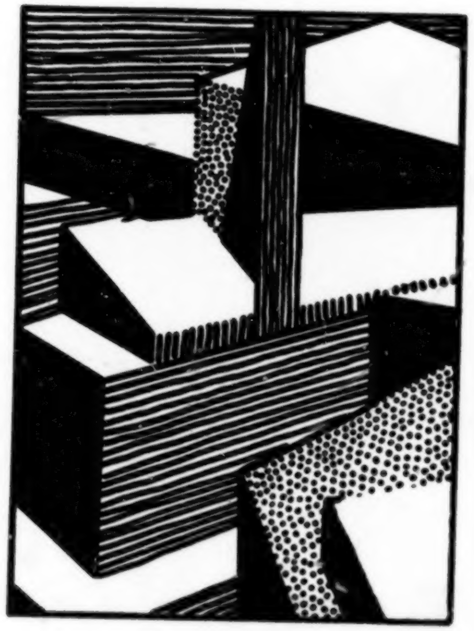

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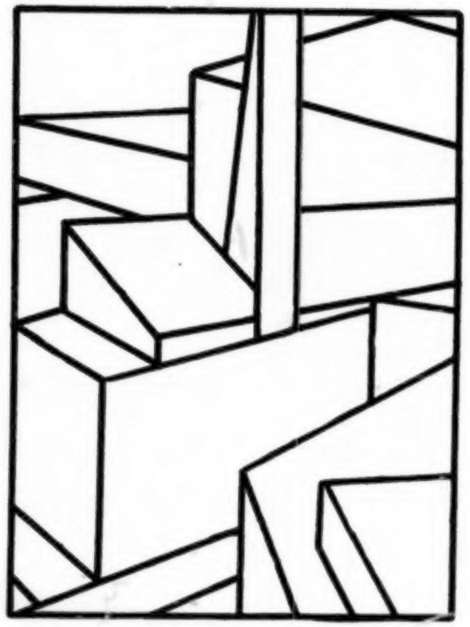

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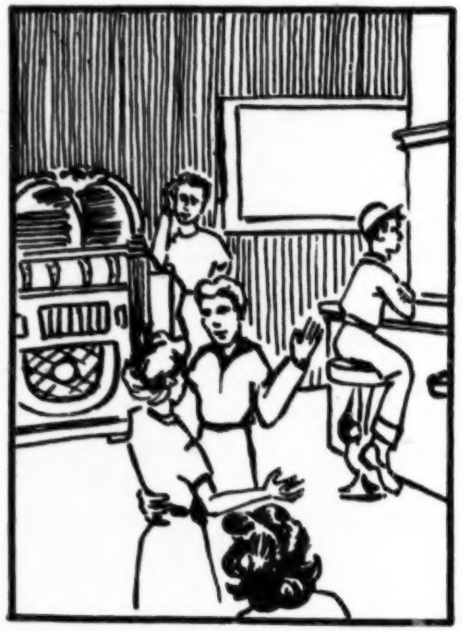
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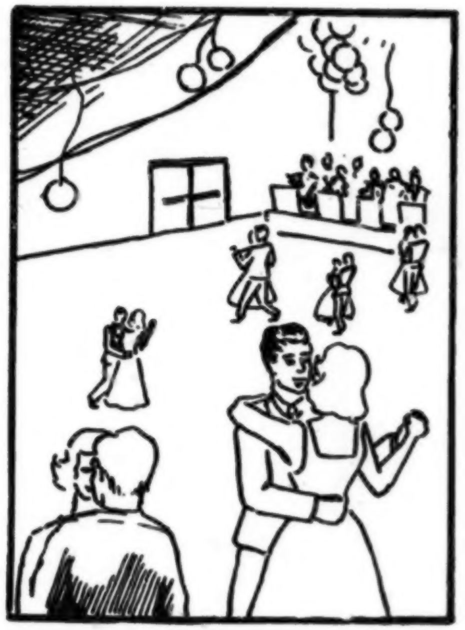
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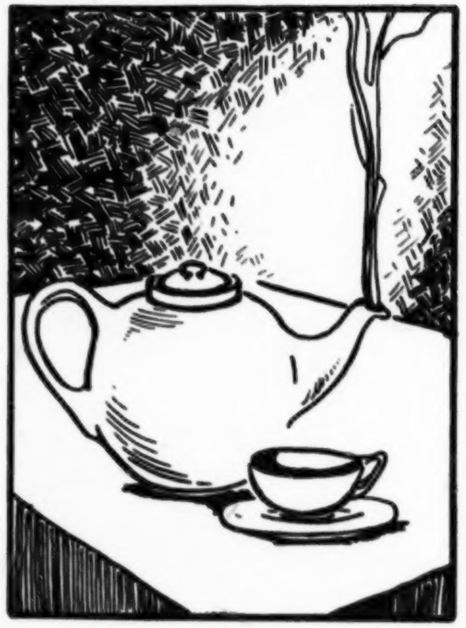
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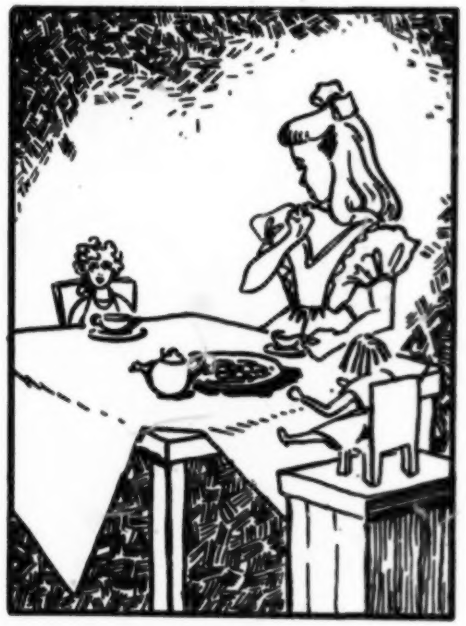
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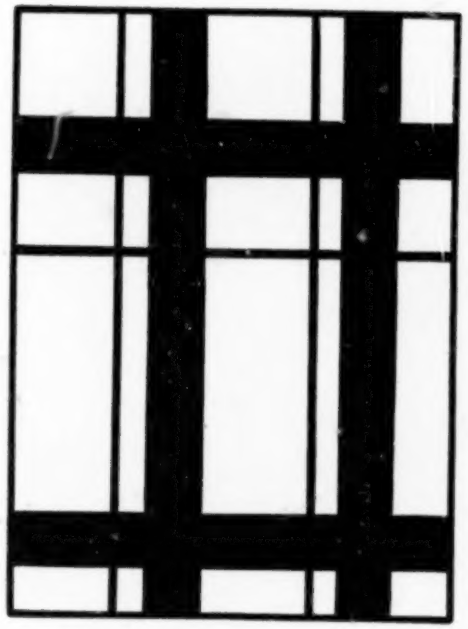
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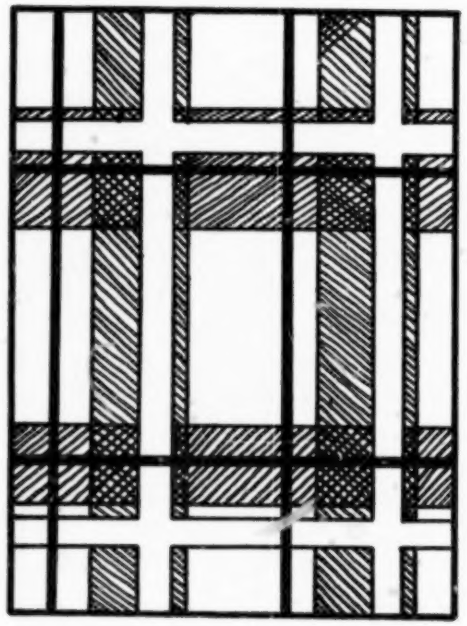
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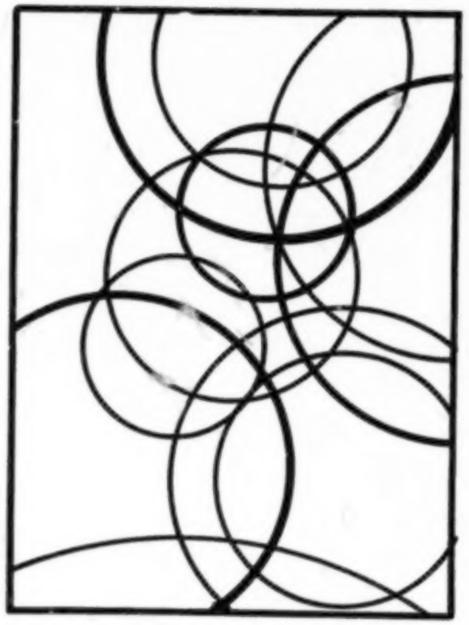
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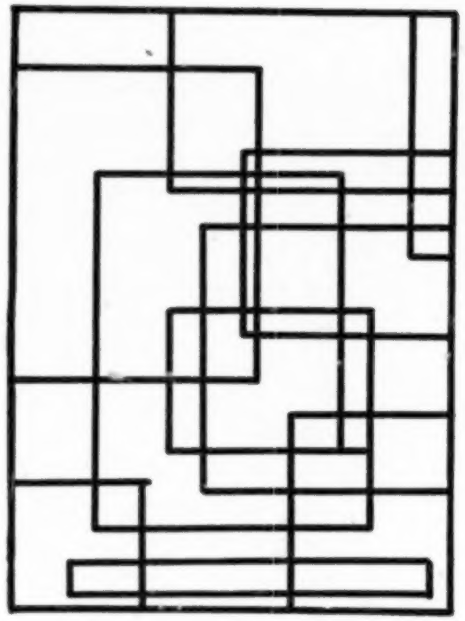
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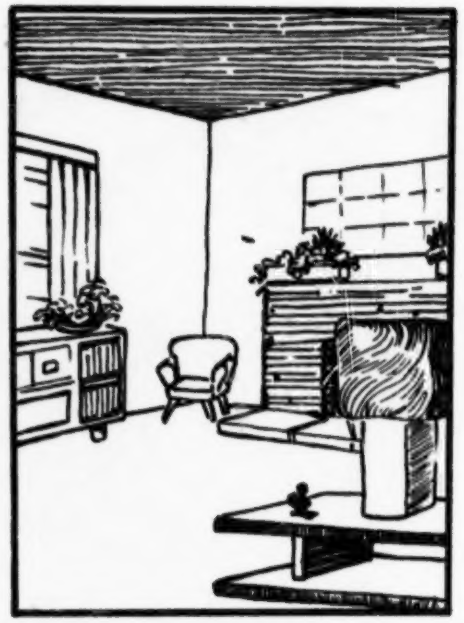

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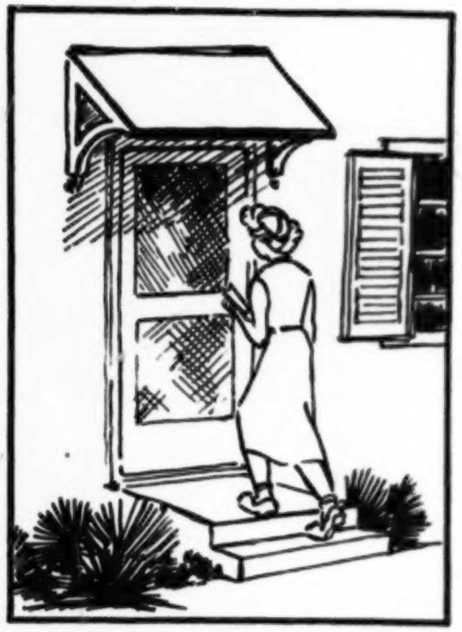

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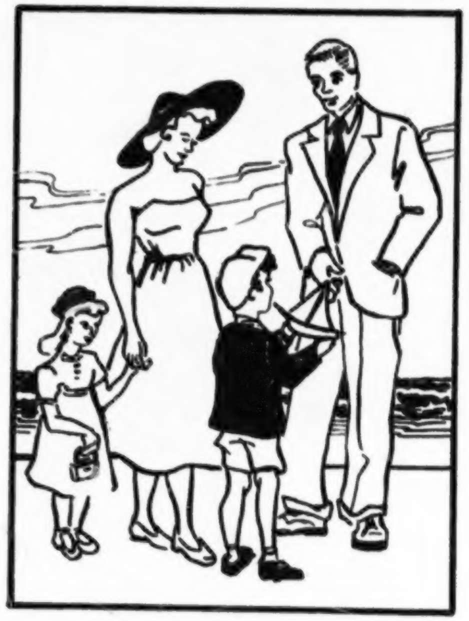

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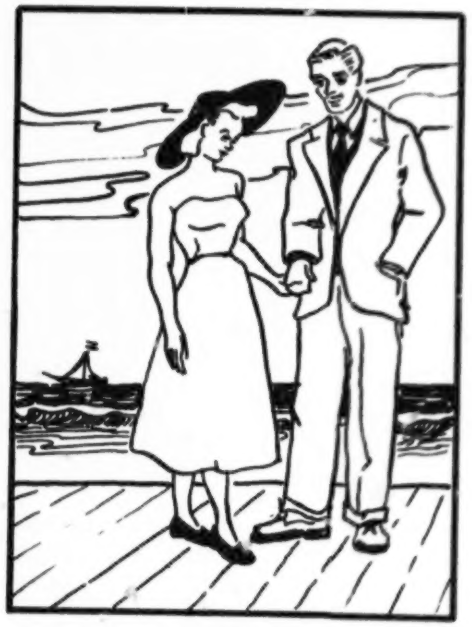

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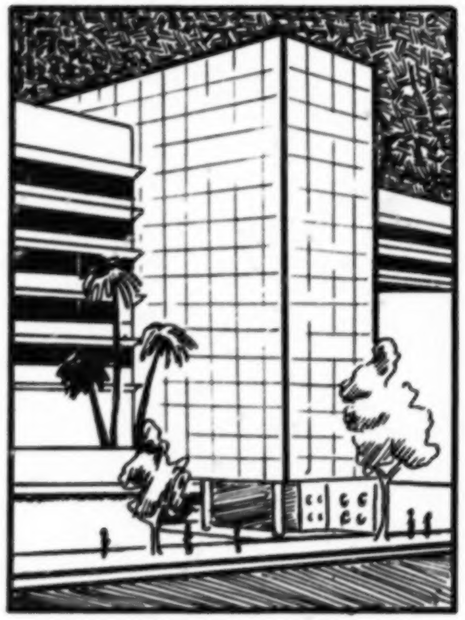

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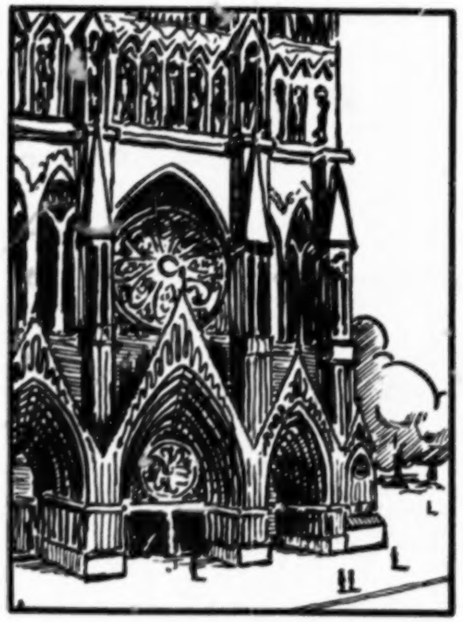

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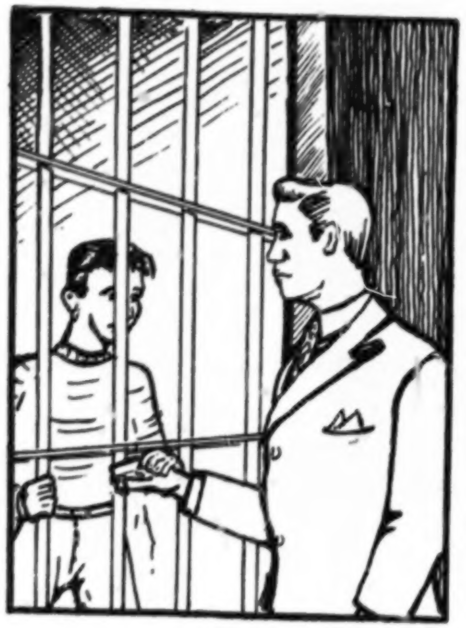

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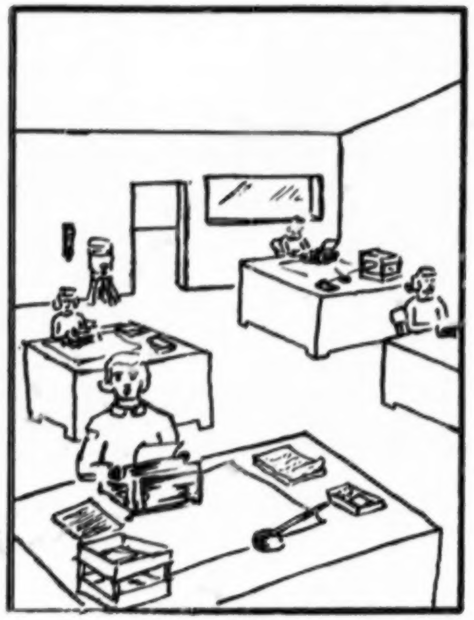

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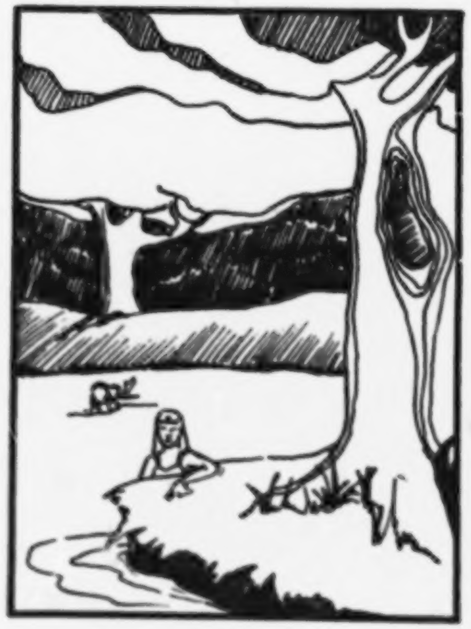
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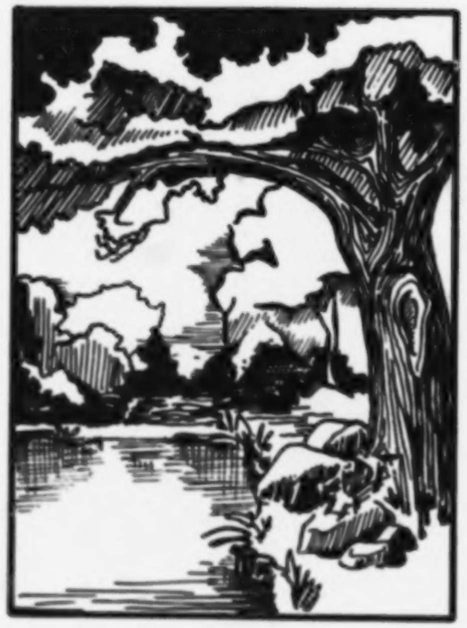
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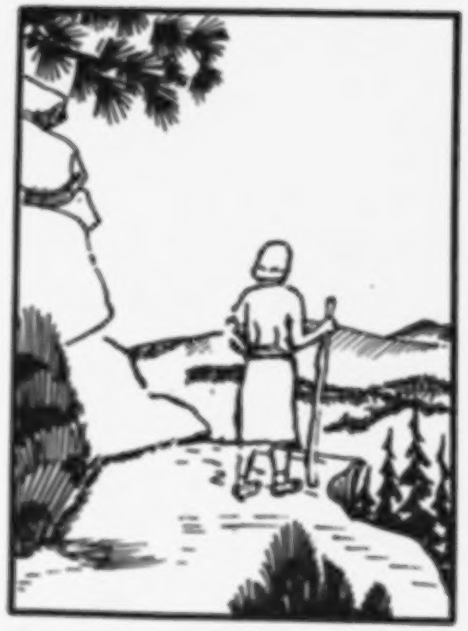
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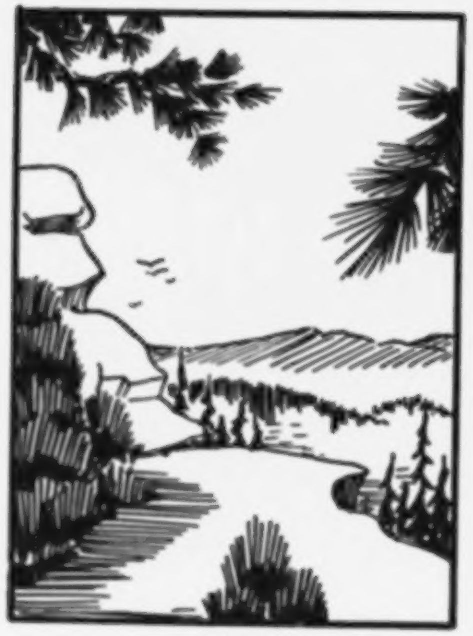
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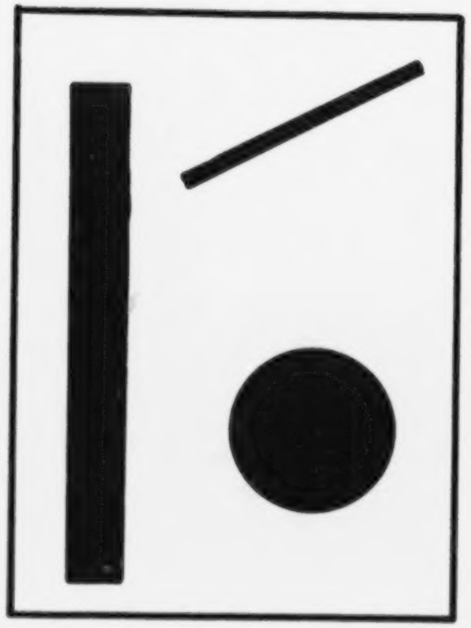
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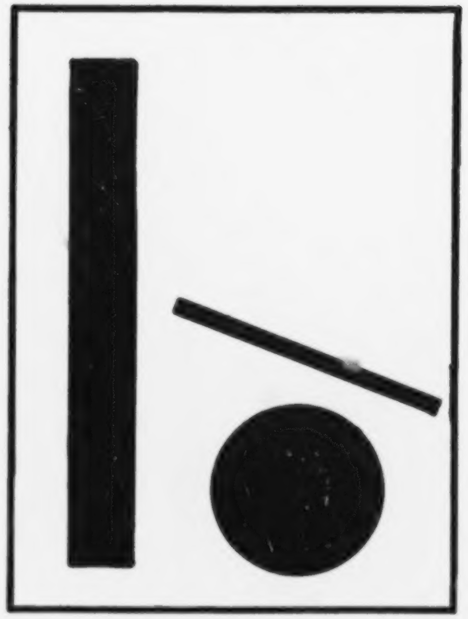
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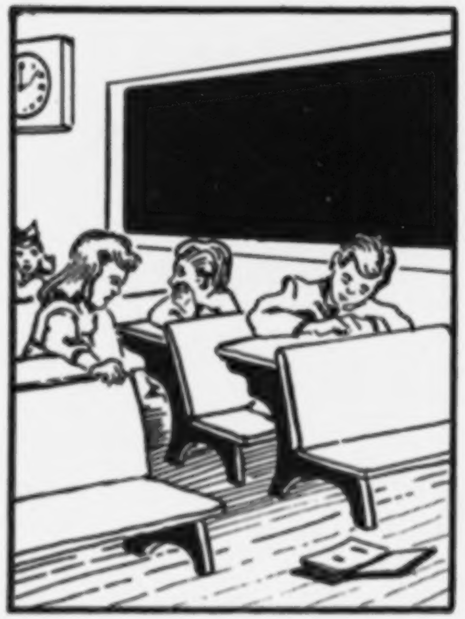
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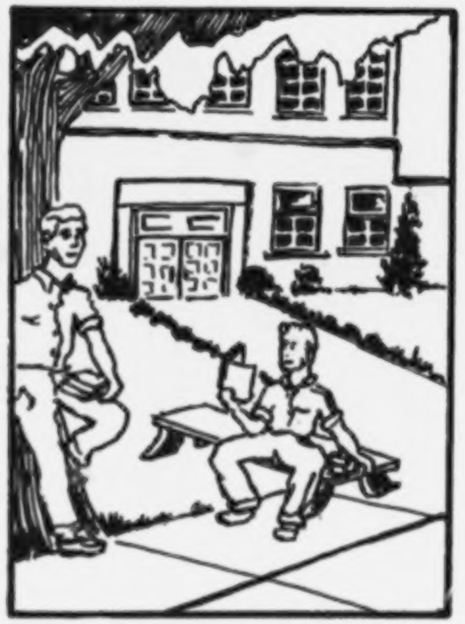
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Be sure you have completed Directions I, II, and III for the preceding pictures before going on to item 207 in next section.

Directions

Beginning with item 207, decide for each item whether response 1 or response 2 best expresses the viewpoint nearest your own.

Find the number of the item on the answer sheet and blacken the proper space, 1 or 2.

Do not omit any item--make a choice even if you find it difficult to do so.

207. Do you believe that parent groups should
    207-1 participate in planning the school program?
    207-2 be well informed regarding the school policies, but not encouraged to participate directly in the program?

208. In your class do you believe it is better
    208-1 to have several activities going on at once?
    208-2 generally to have one activity in progress at a time?

209. In an elementary school class do you think it is better to have
    209-1 the number work and the social studies work set up in relatively distinct units?
    209-2 the number work closely related to the social studies unit?

210. At the third and fourth grade levels do you believe
    210-1 it is important to set and require relatively high standards of pupil achievement in the subjects taught?
    210-2 academic achievement is relatively unimportant as compared with other objectives?

211. Do you feel that classroom responsibilities and administrative responsibilities
    211-1 are fairly distinct and should be clearly defined and separated in the most effective school program?
    211-2 overlap and should be participated in by all personnel regardless of particular assignments.

212. In the third grade do you believe that home study supplementing and complementing classwork
    212-1 is generally desirable?
    212-2 is generally undesirable?

213. In planning units of classwork at the high school level do you believe that
    213-1 this should be largely the responsibility of the teacher concerned?
    213-2 the planning should be the responsibility of the students in the class?

214. In high school classes do you believe that the students learn more effectively (attain the course objectives) in
    214-1 a single unified group?
    214-2 several small groups?

215. Do you believe that parents should be permitted to visit classrooms during regular class hours?
    215-1 Yes
    215-2 No

Directions: For each of the following items, mark on your answer sheet the number of the response which seems to best apply. Select the response that is best among those given so far as you are concerned.

216. How do you feel about the following statement?

"A teacher should occasionally leave a class to its own management."

216-1 Strongly disagree
216-2 Disagree
216-3 Indifferent
216-4 Agree
216-5 Strongly agree

217. In light of your experience with parents, what do you think of the following statement?

"Parents usually cooperate with the teacher."

217-1 Strongly disagree
217-2 Disagree
217-3 Indifferent
217-4 Agree
217-5 Strongly agree

218. In light of your experience with children, what do you think of the following statement?

"Most pupils try to do their work to the best of their ability."

218-1 Strongly disagree
218-2 Disagree
218-3 Indifferent
218-4 Agree
218-5 Strongly agree

219. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers are tactful."

219-1 Strongly disagree
219-2 Disagree
219-3 Indifferent
219-4 Agree
219-5 Strongly agree

220. How do you feel about the following statement?

"Pupils should be allowed to speak with each other without first getting the teacher's permission."

220-1 Strongly disagree
220-2 Disagree
220-3 Indifferent
220-4 Agree
220-5 Strongly agree

221. In light of your acquaintance with parents and their children, what do you think of the following statement?

"Most parents make an effort to teach their children good manners."

221-1 Strongly disagree
221-2 Disagree
221-3 Indifferent
221-4 Agree
221-5 Strongly agree

222. In light of your experience with children, what do you think of the following statement?

"Most pupils take their responsibilities seriously."

222-1 Strongly disagree
222-2 Disagree
222-3 Indifferent
222-4 Agree
222-5 Strongly agree

223. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers have an unusual ability for leadership."

223-1 Strongly disagree
223-2 Disagree
223-3 Indifferent
223-4 Agree
223-5 Strongly agree

224. In light of your knowledge of school employees, what do you think of the following statement?

"Non-teaching employees are usually quite discreet."

224-1 Strongly disagree
224-2 Disagree
224-3 Indifferent
224-4 Agree
224-5 Strongly agree

225. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers are sincere in their actions."

225-1 Strongly disagree
225-2 Disagree
225-3 Indifferent
225-4 Agree
225-5 Strongly agree

226. How do you feel about the following statement?

"Democracy can be successfully practiced in the average classroom."

226-1 Strongly disagree
226-2 Disagree
226-3 Indifferent
226-4 Agree
226-5 Strongly agree

227. In light of your experience with parents, what do you think of the following statement?

"Parents are usually considerate of the teacher's feelings."

227-1 Strongly disagree
227-2 Disagree
227-3 Indifferent
227-4 Agree
227-5 Strongly agree

228. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers are broadly educated."

228-1 Strongly disagree
228-2 Disagree
228-3 Indifferent
228-4 Agree
228-5 Strongly agree

229. In light of your acquaintance with parents and their children, what do you think of the following statement?

"Most parents make an effort to be pals to their children."

229-1 Strongly disagree
229-2 Disagree
229-3 Indifferent
229-4 Agree
229-5 Strongly agree

230. In light of your knowledge of school employees, what do you think of the following statement?

"Non-teaching employees usually try to help the teacher in every way that they can."

230-1 Strongly disagree
230-2 Disagree
230-3 Indifferent
230-4 Agree
230-5 Strongly agree

231. In light of your experience with children, what do you think of the following statement?

"Pupils can behave themselves without constant supervision."

231-1 Strongly disagree
231-2 Disagree
231-3 Indifferent
231-4 Agree
231-5 Strongly agree

232. In light of your experience with parents, what do you think of the following statement?

"Parents usually realize that children are not perfect."

232-1 Strongly disagree
232-2 Disagree
232-3 Indifferent
232-4 Agree
232-5 Strongly agree

233. In light of your experience with children, what do you think of the following statement?

"Most pupils are considerate of the teacher's wishes."

233-1 Strongly disagree
233-2 Disagree
233-3 Indifferent
233-4 Agree
233-5 Strongly agree

234. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers are willing to assume their share of the unpleasant tasks associated with teaching."

234-1 Strongly disagree
234-2 Disagree
234-3 Indifferent
234-4 Agree
234-5 Strongly agree

235. In light of your experience with children, what do you think of the following statement?

"Pupils will usually select good students for their class officers."

235-1 Strongly disagree
235-2 Disagree
235-3 Indifferent
235-4 Agree
235-5 Strongly agree

236. In light of your experience with parents, what do you think of the following statement?

"Parents usually can see the teacher's side of the problem when something happens in school."

236-1 Strongly disagree
236-2 Disagree
236-3 Indifferent
236-4 Agree
236-5 Strongly agree

237. In light of your knowledge of school employees, what do you think of the following statement?

"Non-teaching employees are usually quiet and unassuming."

237-1 Strongly disagree
237-2 Disagree
237-3 Indifferent
237-4 Agree
237-5 Strongly agree

238. How do you feel about the following statement?

"Any class is capable of governing itself sensibly if the teacher will allow it to do so."

238-1 Strongly disagree
238-2 Disagree
238-3 Indifferent
238-4 Agree
238-5 Strongly agree

239. In light of your experience with parents, what do you think of the following statement?

"Parents usually try to meet the teacher halfway."

239-1 Strongly disagree
239-2 Disagree
239-3 Indifferent
239-4 Agree
239-5 Strongly agree

240. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers take a sincere interest in their students."

240-1 Strongly disagree
240-2 Disagree
240-3 Indifferent
240-4 Agree
240-5 Strongly agree

241. In light of your experience with parents, what do you think of the following statement?

"Most parents realize that the teacher has thirty-five or forty other children to take care of and cannot give their child the attention he gets at home."

241-1 Strongly disagree
241-2 Disagree
241-3 Indifferent
241-4 Agree
241-5 Strongly agree

242. In light of your experience with children, what do you think of the following statement?

"Most pupils are respectful toward their teachers."

242-1 Strongly disagree
242-2 Disagree
242-3 Indifferent
242-4 Agree
242-5 Strongly agree

243. In light of your acquaintance with teachers, what do you think of the following statement?

"Most teachers have a good understanding of child psychology."

243-1 Strongly disagree
243-2 Disagree
243-3 Indifferent
243-4 Agree
243-5 Strongly agree

244. How do you feel about the following statement?

"The teacher should sometimes allow a class to do as it wishes even if it conflicts with previously made plans."

244-1 Strongly disagree
244-2 Disagree
244-3 Indifferent
244-4 Agree
244-5 Strongly agree

245. In light of your experience with children, what do you think of the following statement?

"Pupils are usually quite competent to select their own topics for themes and speeches."

245-1 Strongly disagree
245-2 Disagree
245-3 Indifferent
245-4 Agree
245-5 Strongly agree

246. In light of your experience with parents, what do you think of the following statement?

"Most parents are reasonable in their attitude toward teachers."

246-1 Strongly disagree
246-2 Disagree
246-3 Indifferent
246-4 Agree
246-5 Strongly agree

247. How do you feel about the following statement?

"It is possible to develop most school classwork around 'out-of-school' activities."

247-1 Strongly disagree
247-2 Disagree
247-3 Indifferent
247-4 Agree
247-5 Strongly agree

248. How do you feel about the following statement?

"Third grade children should be required to meet prescribed academic standards before beginning the work of the fourth grade."

248-1 Strongly disagree
248-2 Disagree
248-3 Indifferent
248-4 Agree
248-5 Strongly agree

Directions

In this section each question is followed by a number of possible responses. You are to answer each question by selecting the response (or responses) that seems appropriate in your case. If none of the responses to an item apply to you, leave the corresponding spaces blank and go on to the next item.

If only one of the responses applies to you, mark the one response that applies.

If more than one of the responses applies to you, mark all of the responses that apply.

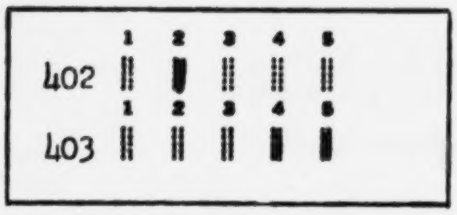
The following example is typical of the questions you will answer in this section.

Example: Which of the following did you do during the past year?

402-1 Followed local events regularly in my newspaper
402-2 Gave money to the community fund or chest
402-3 Contributed money in support of some art project
402-4 Volunteered to help in some art project
402-5 Contributed money in support of some science project

403-1 Planted and tended a flower garden
403-2 Frequently took drives of 100 miles or more
403-3 Visited other states
403-4 Used a checking account at my bank
403-5 Kept a household budget

A teacher who gave money to the community fund, used a checking account and kept a household budget would blacken spaces 402-2, 403-4, and 403-5 as shown below.



A teacher who had done all of the above things in the preceding year would have marked all of the ten possible spaces. A teacher who had done none of the above things in the preceding year would have left all of the spaces blank.

Notice that responses to many items call for responses in more than one row on the answer sheet. For example, in order to answer the one question, "Which of the following did you do during the past year?" the teacher in our example had to mark spaces in both row 402 and row 403. Be sure to answer all the questions which apply to you.

How old are you?

249-1 Under 20
249-2 20 to 24
249-3 25 to 29
249-4 30 to 34
249-5 35 to 39

250-1 40 to 44
250-2 45 to 49
250-3 50 to 54
250-4 55 to 59
250-5 60 or older

How many years experience have you had teaching the elementary grades?

251-1 0
251-2 Less than 1
251-3 1
251-4 2
251-5 3

252-1 4
252-2 5 to 9
252-3 10 to 14
252-4 15 to 19
252-5 20 or more

What grade or grades do you now teach?

253-1 Nursery School
253-2 Kindergarten
253-3 First Grade
253-4 Second Grade
253-5 Third Grade

254-1 Fourth Grade
254-2 Fifth Grade
254-3 Sixth Grade
254-4 Seventh Grade
254-5 Eighth Grade

How many years have you taught in the district in which you are now employed?

255-1 Less than 1
255-2 1
255-3 2
255-4 3
255-5 4

256-1 5 to 9
256-2 10 to 14
256-3 15 to 19
256-4 20 or more

Are you

257-1 single?
257-2 married?
257-3 separated or divorced?
257-4 widowed?

How many people including yourself make up your immediate family (living together as a family unit)?

258-1 1
258-2 2
258-3 3
258-4 4
258-5 5 or more

How long has it been since you have taken any college course?

259-1 Now enrolled
259-2 Enrolled last year
259-3 1 year
259-4 3 years
259-5 5 years or more

At what kind of a college did you complete the major part of your undergraduate study?

260-1 Teachers College or "State College"
260-2 Liberal Arts College
260-3 Women's College
260-4 Large University

When in college, were you

261-1 an outstanding student?
261-2 a good student?
261-3 an average student?
261-4 a poor student?

How was the major portion of the expense of your college education defrayed?

262-1 Self-support
262-2 Provided by parents or relatives
262-3 Provided by scholarship or fellowship

Are your memories of childhood

263-1 extremely happy?
263-2 more happy than the average?
263-3 of average happiness?
263-4 rather unhappy?
263-5 decidely unhappy?

Which of the following did you do as a child or adolescent?

264-1 Cared for younger children in own family
264-2 Cared for children outside immediate family
264-3 Played school
264-4 Read stories to children
264-5 Took charge of a class when the teacher was absent

Which of the following have you done?

265-1 Acted as counselor in a summer camp
265-2 Worked in a neighborhood settlement house
265-3 Sponsored a Scout or Campfire group
265-4 Worked on a playground
265-5 Practice teaching

What persons have advised you that you would make a good teacher?

266-1 No one
266-2 Family
266-3 Teacher
266-4 Counselor
266-5 Friends

Which of the following did you do during the past year?

267-1 Subscribed to some orchestral or musical concert series
267-2 Contributed money in support of some local musical enterprise
267-3 Read one or more books about music, musicians, or music history
267-4 Participated in some vocal or instrumental group
267-5 Volunteered to help in some activity related to music

Which of the following did you do during the past year?

268-1 Belonged to a book purchasing club
268-2 Read book reviews in the newspapers or magazines at least once a month
268-3 Attended a lecture to hear some author
268-4 Attended meetings of a writer's or literary club or study group
268-5 Wrote an essay, story, poem, or play

269-1 Read certain magazines and periodicals regularly (at least two out of three issues)
269-2 Read books other than those I purchased
269-3 Bought or sold stocks, bonds, or property, or made similar financial investments
269-4 Bought goods or property on installment

Which of the following did you do during the past year?

270-1 Listened to religious programs on the radio
270-2 Read articles about church or religious activities in a newspaper or magazine
270-3 Volunteered to serve on some church committee
270-4 Volunteered to teach a Sunday school class
270-5 Was a member of some professional organization

Which of the following did you do during the past year?

271-1 Visited an art gallery or museum
271-2 Did some redecorating in my home or office to make it more attractive
271-3 Read one or more books about art, artists, or art history
271-4 Attended an art lecture
271-5 Bought some painting or other art work

272-1 Attended an art study group or workshop of some sort
272-2 Did some painting or other art work myself
272-3 Did some photography

Which of the following did you do during the past year?

273-1 Read science news in newspapers or magazines at least once a month
273-2 Repaired some electrical device, such as a radio, toaster, or socket
273-3 Repaired some mechanical device, such as a faucet, carpet sweeper, or lawnmower
273-4 Attended a lecture or listened to talks on the radio about science
273-5 Visited a science museum or exhibition of scientific inventions

274-1 Looked up the answer to some scientific question in an encyclopedia or other reference book
274-2 Attended meetings of a science study club or work group
274-3 Read a new book about science
274-4 Made some piece of scientific apparatus, such as a radio, telescope, photo-enlarger

Check any of the following factors that you think have contributed toward your choice of teaching as a career:

275-1 Influence of parents or other relatives
275-2 Influence of employer or supervisor
275-3 Influence of educational advisor
275-4 Enjoyment of school environment
275-5 Satisfying experience in school work

276-1 Dissatisfaction with another field of work
276-2 Inability to achieve some other vocational goal
276-3 Desire for financial security
276-4 Favorable prospect of employment
276-5 Favorable prospect of increased earnings

Which of the following did you do during the past year?

277-1 Went hunting, fishing, or camping
277-2 Visited some historical site
277-3 Visited other countries
277-4 Gave considerable time to knitting or sewing
277-5 Engaged in some form of handwork (ceramics, leather work, woodwork, etc.)

278-1 Attended regularly some class in the crafts
278-2 Began or added to my collection (stamps, minerals, etc.)
278-3 Attended the motion pictures regularly

Check any of the following factors that you think contributed toward your choice of teaching as a career:

279-1 Favorable prospect of professional advancement
279-2 Desire for a satisfying position in the community
279-3 Desire to help people
279-4 Opportunity for public service
279-5 Desire for intellectual growth

280-1 Interest in books
280-2 Interest in social problems
280-3 Interest in community activity

Check any of the following activities in which you have spent an average of three hours or more per week during the past three weeks (or the most recent three-week period when such activities were in season):

281-1 Gardening
281-2 Indoor games (cards, chess, etc.)
281-3 Indoor exercise (hand ball, gymnastics, etc.)
281-4 Painting, sculpture, etc.
281-5 Attending concerts, exhibits, etc.

282-1 Reading (recreational)
282-2 Attending movies, attending theater, attending theatricals, debating, etc.
282-3 Hobbies
282-4 Home workshop activity
282-5 Social dancing

Check the radio programs to which you listen whenever possible:

283-1 Chesterfield Hour
283-2 Stop the Music
283-3 Information Please
283-4 Drew Pearson
283-5 Metropolitan Opera Broadcasts

284-1 Dr. I. Q.
284-2 Fred Allen
284-3 Suspense
284-4 Blondie and Dagwood
284-5 The Guiding Light

285-1 Life with Riley
285-2 Walter Winchell
285-3 Chicago Theater of the Air
285-4 Jack Benny
285-5 Local news broadcasts

In which of the areas listed below do you follow a hobby?

286-1 Amusements (dancing, movies, etc.)
286-2 Art
286-3 Music
286-4 Collecting (stamps, etc.)
286-5 Dramatics

287-1 Literature
287-2 Hand crafts (leather working, ceramics, etc.)
287-3 Photography
287-4 Cooking
287-5 Sewing

What was the attitude of your parents toward your choice of teaching as a career?

288-1 Strongly approved
288-2 Approved
288-3 Doubted wisdom of choice
288-4 Expressed no opinion
288-5 Disapproved (or disappointed)

Indicate which of the following organizations you have belonged to or now belong to:

289-1 High school or college sorority or fraternity
289-2 Hobby club
289-3 Honor society (scholastic, scientific, or professional)
289-4 Debating society or club
289-5 Community social organization (bridge club, country club, etc.)

290-1 Civic service club
290-2 Educational organization (N.E.A., state and local teacher groups, etc.)
290-3 Religious (Sunday school class, church, etc.)
290-4 Other organization than those mentioned above

Check the kind (or kinds) of books you frequently read during leisure time:

291-1 Travel and adventure
291-2 Biography
291-3 Fiction
291-4 Humor
291-5 Collections of poems, essays, stories, etc.

Where was most of your childhood spent?

292-1 In the country
292-2 In a village of under 5,000
292-3 In a town of under 25,000
292-4 In a city of under 100,000
292-5 In a very large metropolitan area

Check any of the statements that apply to your childhood home and your family:

293-1 Home was owned by family
293-2 Family owned an automobile
293-3 There was a bathtub in home
293-4 There was a piano in home
293-5 Family employed either part-time or full-time help in home

294-1 A daily newspaper was taken
294-2 You had lessons in dancing, dramatics, art, or music outside of school
294-3 There was a radio in home
294-4 There was a washing machine in home
294-5 There was a telephone in home

Did your parents agree on most topics?

295-1 Always
295-2 Nearly always
295-3 Frequently
295-4 Sometimes
295-5 Never

When a child, how many assigned chores or duties did you have at home?

296-1 An excessive number
296-2 More than other children I knew
296-3 About same number as other children
296-4 Less than most children
296-5 None

How would you characterize the activities in your home as a child?

297-1 Highly organized
297-2 Little confusion, although no planned organization
297-3 Considerable confusion, rushing, etc.

Were your parents insistent upon high standards of performance and conduct?

298-1 Very insistent
298-2 More insistent than average parents
298-3 About as insistent as average parents
298-4 Permitted extensive freedom of activity

When you were a child, how often during the day did one or the other of your parents scold or "get after" you?

299-1 Steadily
299-2 Rather frequently
299-3 Occasionally
299-4 Not often
299-5 Never

What is your sex?

300-1 Female
300-2 Male

In what state are you now teaching?

301-1 Either Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, or Connecticut
301-2 Either New York, New Jersey, Pennsylvania, Delaware, Maryland, or District of Columbia
301-3 Either Virginia, West Virginia, or North Carolina
301-4 Either South Carolina, Georgia, Alabama, Mississippi, Louisiana, Florida, Kentucky, or Tennessee
301-5 Either Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, Iowa, or Missouri

302-1 Either Kansas, Nebraska, North Dakota, or South Dakota
302-2 Either Oklahoma, Texas, Arkansas, Arizona, or New Mexico
302-3 Either Montana, Idaho, Wyoming, Utah, Colorado, or Nevada
302-4 Either California, Washington, or Oregon

In which of the following kinds of schools are you now teaching?

303-1 Private School
303-2 Public School
303-3 Parochial School

What is the approximate size of the community in which your school is located?

304-1 Less than 100 population (rural)
304-2 Population between 100 and 2,500
304-3 Population between 2,500 and 10,000
304-4 Population between 10,000 and 50,000
304-5 Population between 50,000 and 100,000

305-1 Population between 100,000 and 500,000
305-2 Population between 500,000 and 1,000,000
305-3 Population greater than 1,000,000

In which of the following kinds of schools are you now teaching?

306-1 One room, one teacher school
306-2 School of 2 to 5 teachers
306-3 School of 6 to 16 teachers
306-4 School of 17 to 50 teachers
306-5 School of more than 50 teachers

How would you describe the socio-economic status of the community served by the school in which you teach?

307-1 Considerable poverty
307-2 Somewhat below average in housing, income, and availability of necessities and ordinary comforts
307-3 Most of community relatively adequately provided for with regard to housing, income, and availability of necessities and ordinary comforts
307-4 Somewhat above average with regard to housing, income, etc.
307-5 Exceptionally well off from standpoint of housing, income, etc.

How would you describe the cultural aspects of the community in which you teach?

308-1 High cultural level
308-2 Above average cultural level
308-3 Average cultural level
308-4 Below average cultural level
308-5 Low cultural level

How would you describe the methodological emphasis of the school system in which you teach?

309-1 "Traditional" (or leaning toward the "traditional")
309-2 "Modern" or "Progressive" (or leaning toward the "progressive")

How would you describe your own viewpoint relative to educational methodology?

310-1 "Traditional"
310-2 "Modern" or "Progressive"

Directions: For each of the following questions, mark on your response sheet the number of the response that best applies to you. If there is no response that suits you exactly, select the answer that is best among those given so far as you are concerned.

311. Which of the following words do you associate with the word DARK?

311-1 Dreary
311-2 Light
311-3 Day
311-4 Night
311-5 Bright

312. Which of the following is more true of you?

312-1 I am usually too agreeable for my own good and accept things too readily.
312-2 I usually win in arguments or debates.

313. Which of the following responses first comes to your mind when you see the word INTRACTABLE?

313-1 Suspicious
313-2 Unruly
313-3 Wicked
313-4 Unexpected
313-5 Never heard of the word

314. Which of the following is more true of you?

314-1 I tend to worry.
314-2 I tend to be easygoing.

315. Which of the following responses first comes to your mind when you see the word ORISON?

315-1 Song
315-2 Constellation
315-3 East
315-4 Prayer
315-5 Never heard of the word

316. Which of the following is more true of you?

316-1 I am more nervous than easygoing.
316-2 I am more calm than easily upset.

317. Which of the following words do you associate with HILL in the same way you associate ROOF with PITCH?

317-1 Catch
317-2 Mountain
317-3 Tar
317-4 Grade
317-5 Altitude

318. Which of the following is more true of you?

318-1 As a child I was very sensitive.
318-2 As a child I was happy-go-lucky.

319. Which of the following responses first comes to your mind when you see the word LIMPID?

319-1 Transparent
319-2 Sea animal
319-3 Lame
319-4 Flimsy
319-5 Never heard of the word

320. Which of the following is more true of you?

320-1 Occasionally I put off until tomorrow what I should do today.
320-2 I never get discouraged.

321. Which of the following words do you associate with CONCERT in the same way you associate LANDSCAPE with PHOTOGRAPH?

321-1 Beautiful
321-2 Recital
321-3 Applause
321-4 Record
321-5 Critic

322. Which of the following is more true of you?

322-1 There have been some times when I have been unfair or mean to someone else.
322-2 I make it a practice to be a good listener.

323. Which of the following is more true of you?

323-1 I am inclined to look at the practical side of things.
323-2 I wish I wouldn't worry so much.

324. Which of the following is more true of you?

324-1 I take things as they come and they don't bother me.
324-2 I have always been somewhat uneasy about things.

325. Which of the following responses first comes to your mind when you see the word GULTIGENT?

325-1 Refulgent
325-2 Changeable
325-3 Baseless
325-4 Pusillanimous
325-5 Never heard of the word

326. Which of the following is more true of you?

326-1 Criticism in front of others makes me feel uncomfortable.
326-2 I never mind losing a game for it's the playing that counts.

327. Which of the following is more true of you?

327-1 I wish I weren't so nervous.
327-2 I wish I had more responsibility.

328. Which of the following responses first comes to your mind when you see the word ODIOUS?

328-1 Bad-humored
328-2 Ill-smelling
328-3 Detestable
328-4 Pleasant
328-5 Never heard of the word

329. Which of the following is more true of you?

329-1 Sometimes I feel like swearing.
329-2 I make it a practice never to gossip.

330. Which of the following is more true of you?

330-1 I seldom act on the spur of the moment without stopping to think.
330-2 I sometimes get angry.

331. Which of the following words do you associate with MARY in the same way you associate STORY with STORK?

331-1 Baby
331-2 Name
331-3 Girl
331-4 Mark
331-5 Fiction

332. Which of the following is more true of you?

332-1 I am often impatient and can hardly wait for something I anticipate.
332-2 I do not usually get excited or impatient about something I anticipate.

333. Which of the following words do you associate with TESTIMONY in the same way you associate HISTORY with LEGEND?

333-1 Gossip
333-2 Trial
333-3 Facts
333-4 Court
333-5 Truth

334. Which of the following is more true of you?

334-1 I have never to my knowledge told a lie.
334-2 I sometimes exaggerate or stretch stories a little in retelling them.

335. Which of the following words do you associate with IMAGINATION in the same way you associate FUTURE with PAST?

335-1 Success
335-2 Present
335-3 Image
335-4 Memory
335-5 Fortune-teller

336. Which of the following is more true of you?

336-1 Sometimes I have been very anxious to get away from my family.
336-2 I always follow the rule "business before pleasure."

337. Which of the following responses first comes to your mind when you see the word PHLEGMATIC?

337-1 Happy
337-2 Nervous
337-3 Spasmodic
337-4 Sluggish
337-5 Never heard of the word

338. Which of the following is more true of you?

338-1 I feel blue much of the time.
338-2 I seldom have occasion to feel "low" or blue.

339. Which of the following words do you associate with MOON in the same way you associate EARTH with SUN?

339-1 Universe
339-2 Earth
339-3 Night
339-4 Light
339-5 Star

340. Which of the following is more true of you?

340-1 I wish I could be as happy as other people seem to be.
340-2 I wish there were more emphasis on practical things.

341. Which of the following responses first comes to your mind when you see the word CENOTIVE?

341-1 Arrogant
341-2 Pellucid
341-3 Suave
341-4 Atrocious
341-5 Never heard of the word

342. Which of the following is more true of you?

342-1 I sometimes pretend to know a little more than I really do.
342-2 I like everyone I know.

343. Which of the following is more true of you?

343-1 When things go wrong, I never blame the other fellow.
343-2 I sometimes try to get my own way regardless of what others may want.

344. Which of the following is more true of you?

344-1 I am often sorry for my speedy decisions.
344-2 I seldom regret my speedy decisions.

345. Which of the following is more true of you?

345-1 I make it a practice never to boast.
345-2 Sometimes I just can't seem to make much progress at what I am doing.

346. Which of the following is more true of you?

346-1 I have a poor memory.
346-2 I feel excited and interested after studying.

347. Which of the following is more true of you?

347-1 I have found something valuable in every course I have taken in school.
347-2 I think I took some courses in college that were the wrong courses for me.

348. Have you filled out inventories of this general type before?

348-1 Yes
348-2 No

349. Do you like to fill out preference and activity inventories of this general type?

349-1 Yes
349-2 No

350. Look at the front cover page of this booklet. Which of the following numbers and letters appear in the upper right hand corner?

350-1 E 54
350-2 SE 54
350-3 MS 54

HAVE YOU ANSWERED ALL OF THE QUESTIONS?

You have given your cooperation to one of the most extensive surveys ever made of teacher activities, opinions, and preferences.

By responding to these materials you have made a major professional contribution.

May we express the appreciation of the Teacher Characteristics Study for your cooperation.

APPENDIX H

TABULATION OF NUMBERS OF PUPILS TO WHOM TESTS OF INTELLIGENCE AND ACHIEVEMENT WERE ADMINISTERED IN EACH OF NINETY-FIVE SCHOOL SYSTEMS

APPENDIX H

Tabulation of Numbers of Pupils to Whom Tests of Intelligence and Achievement were Administered in each of 95 School Systems

System Sample Number	Intelligence			Achievement battery		
	Number of pupils tested in			Number of pupils tested in		
	Grade 4	Grade 7	Grade 10	Grade 4	Grade 7	Grade 10
101	342	261	397	336	285	337
103	223	209	244	227	212	218
104	723	471	619	688	562	598
105	989	992	1079	484	519	594
106	662	439	489	707	374	399
107	284	194	232	--	193	208
108	291	205	224	241	190	157
109	257	189	214	250	221	319
110	280	188	222	280	182	--
111	163	112	186	162	138	164
112	387	370	493	411	356	462
113	684	476	446	662	460	532
114	199	133	144	142	139	138
115	379	299	293	339	319	305
116	358	350	348	352	351	--
117	911	783	814	888	801	830
120	1543	1113	1129	1351	1205	1249
121	227	175	167	235	186	180
122	159	108	122	162	114	135
123	423	423	538	446	442	540
124	615	431	525	558	567	451
125	182	125	133	177	122	138
126	907	754	980	715	810	485
127	2377	1678	1762	2453	2000	1860
128	763	559	697	742	508	680
129	548	359	392	543	356	406
130	99	70	229	102	161	229
201	144	133	146	150	157	133
202	278	171	157	339	211	237
203	190	168	160	205	166	140
204	256	225	242	272	249	246
205	80	91	104	84	97	95
206	111	101	100	110	98	100
207	263	217	164	290	220	172
208	1465	752	624	1246	771	394
209	121	125	111	123	130	111
210	114	114	110	118	116	120
211	283	275	343	307	269	354
212	727	620	774	699	688	746
213	166	158	185	148	162	179

System	Intelligence			Achievement battery		
	Number of pupils tested in			Number of pupils tested in		
	Grade 4	Grade 7	Grade 10	Grade 4	Grade 7	Grade 10
214	126	96	126	133	110	120
215	305	252	264	311	270	374
216	461	371	359	449	361	383
217	232	214	221	271	232	343
218	334	198	192	340	222	190
219	165	187	204	157	187	200
220	190	160	275	178	142	278
221	268	216	208	266	227	212
222	84	69	112	92	75	117
223	153	90	91	135	94	99
224	119	94	89	124	93	98
225	278	267	338	296	292	355
226	95	85	189	97	85	192
227	172	144	134	152	161	147
228	143	124	183	204	--	203
229	76	79	64	65	74	66
230	143	129	156	141	117	153
301	152	103	99	127	--	94
302	129	130	100	154	115	99
304	88	85	80	81	82	58
305	103	89	64	97	95	59
306	198	196	229	230	239	246
307	74	55	76	90	68	88
308	70	59	60	64	51	60
309	133	148	98	124	106	93
310	47	43	41	46	44	42
311	82	54	71	145	110	62
312	151	119	94	161	122	97
313	85	51	58	66	51	59
314	117	103	104	118	102	101
315	131	81	*	141	82	*
316	115	92	32	115	89	68
317	162	137	126	173	142	124
318	386	248	189	395	295	178
319	127	106	104	125	95	98
320	116	149	127	129	141	119
321	253	219	175	270	234	176
322	63	54	70	73	81	70
323	145	82	97	148	87	91
324	149	118	82	142	139	93
325	73	65	60	95	70	56
326	71	63	65	71	71	56
327	150	104	110	143	97	89
328	107	102	59	111	89	54
329	143	100	104	138	100	107

330	86	63	92	86	75	84
331	170	77	78	109	136	79
332	91	91	99	178	98	85
400	106	71	*	110	78	*
401	45	22	*	48	22	*
402	36	25	*	35	23	*
405	420	392	349	295	376	386
500	226	*	*	232	*	*
502	73	91	*	73	100	*
504	302	*	*	316	*	*
Grade totals	27,692	21,178	22,743	26,409	21,754	21,342
Sample totals		71,613			69,505	

* No grade 10 in system

* No grade 7 in system

APPENDIX I

Summaries of Analyses of Variance

Mean Performance of Ten Groups of Systems for:

All Sub-tests in *Iowa Tests of Basic Skills*,

Grades 4 and 7

In this appendix, there are eleven tables. Each of the first ten tables summarizes the analyses of variance within one group of systems, classified according to community setting and socio-economic level. The eleventh table reports the analysis of variance among the ten groups of systems.

Table I-1

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in the Urban-1 Group

(Urban Systems, Highest of 5 Socio-economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	216.67	51.58	308.88	78.50	223.35	89.66	129.08	169.76	59.95	84.07
Within schools	2837.90	4630.18	3874.98	3937.67	2611.76	8143.88	1743.82	2267.43	1954.20	1607.47
Degrees of Freedom										
Among schools	4	4	4	4	4	4	4	4	4	4
Within schools	1119	1089	1119	1089	1119	1089	1119	1089	1119	1089
Mean Squares										
Among schools	54.17	12.90	77.22	19.63	55.84	22.42	32.27	42.44	14.99	21.02
Within schools	2.54	4.25	3.46	3.62	2.33	7.48	1.56	2.08	1.75	1.48
F ratio	** 21.32	** 3.03	** 22.31	** 5.42	** 23.96	** 2.99	** 20.68	** 20.40	** 8.56	** 14.20
Totals										
Degrees of freedom	1123	1093	1123	1093	1123	1093	1123	1093	1123	1093
Sums of squares	3054.57	4681.76	4133.86	4016.17	2835.11	8233.54	1872.90	2437.19	2014.15	1691.54
Variance	2.720	4.283	3.726	3.674	2.525	7.533	1.668	2.230	1.794	1.548

** Significant at the 1% level.

Table I-2

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in the Urban-2 Group

(Urban Systems, Second Highest of 5 Socio-economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work Study Skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	423.39	1145.04	3632.78	809.39	124.15	874.75	115.42	553.92	326.56	266.34
Within schools	15567.32	12615.81	17724.24	11364.20	5814.61	11069.40	3998.47	7592.37	3673.30	5375.57
Degrees of Freedom										
Among schools	9	9	9	9	9	9	9	9	9	9
Within schools	2600	2531	2600	2531	2600	2531	2600	2531	2600	2531
Mean Squares										
Among schools	47.04	127.23	403.64	89.93	13.79	97.19	12.82	61.55	36.28	29.59
Within schools	5.99	4.98	6.82	4.49	2.24	4.37	1.54	3.00	1.41	2.12
F ratio	** 7.85	** 25.54	** 44.52	** 20.02	** 6.15	** 22.24	** 8.32	** 10.51	** 25.73	** 13.59
Totals										
Degrees of freedom	2609	2540	2609	2540	2609	2540	2609	2540	2609	2540
Sums of squares	15990.71	13760.85	21357.02	12173.59	5938.76	11944.15	4113.89	8146.29	3999.96	5641.91
Variance	6.129	5.418	8.186	4.793	2.276	4.702	1.577	3.207	1.533	2.221

** Significant at the 1% Level.

Table I-3

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in Urban-3 Group

(Urban Systems, Middle Level of Five Socio-economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	93.98	126.17	109.01	285.20	122.15	185.86	67.32	64.47	67.16	32.33
Within schools	6656.38	8949.20	8751.60	8763.86	6527.01	8482.63	3765.13	10167.91	3736.62	4759.57
Degrees of Freedom										
Among schools	10	10	10	10	10	10	10	10	10	10
Within schools	2653	1942	2653	1942	2653	1942	2653	1942	2653	1942
Mean Squares										
Among schools	9.40	12.62	10.90	28.52	12.22	18.59	6.73	6.45	6.72	3.23
Within schools	2.51	4.60	3.30	4.51	2.46	4.37	1.42	5.24	1.41	2.45
F ratio	** 3.74	** 2.74	** 3.30	** 6.32	** 4.96	** 4.25	** 4.73	** 1.23	** 4.76	** 1.31
Totals										
Degrees of freedom	2663	1952	2663	1952	2663	1952	2663	1952	2663	1952
Sums of squares	670.36	9075.37	8860.61	9049.06	6649.16	8668.49	3832.45	10232.38	3803.78	4791.90
Variance	2.535	4.649	3.327	4.636	2.497	4.44	1.439	5.242	1.428	2.455

** Significant at the 1% Level.

Table 1-4

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in Urban-4 Group

(Urban Systems, Next to Lowest of 5 Socio-economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	4	4	
Sums of Squares										
Among schools	99.36	67.69	99.61	51.64	3646.76	69.83	3335.88	87.54	3301.35	100.14
Within schools	3924.50	5598.76	5190.14	4421.26	4309.76	5147.21	2578.72	3282.85	2235.06	3216.63
Degrees of Freedom										
Among schools	8	8	8	8	8	8	8	8	8	8
Within schools	2057	1600	2057	1600	2057	1600	2057	1600	2057	1600
Mean Squares										
Among schools	12.42	8.46	12.45	6.46	455.85	8.72	416.99	10.94	412.67	12.51
Within schools	1.90	3.50	2.52	2.76	2.10	3.21	1.25	2.05	1.08	2.01
F ratio	** 6.53	** 2.41	** 4.94	** 2.34	** 2.17	** 2.71	** 3.34	** 5.33	** 3.82	** 6.22
Totals										
Degree of freedom	2065	1608	2065	1608	2065	1608	2065	1608	2065	1608
Sums of squares	4023.86	5666.45	5289.75	4472.90	7956.52	5217.04	5914.60	3370.39	5536.41	3316.67
Variance	1.949	3.524	2.562	2.782	3.853	3.244	2.864	2.096	2.681	2.063

** Significant at the 1% level.

Table I-5

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in Urban-5 Group

(Urban Systems: Lowest of 5 Socio-Economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	283.87	263.01	403.58	211.62	335.54	284.04	979.85	438.01	289.37	198.42
Within schools	6492.33	12787.89	8007.89	10690.09	6631.16	11468.00	3949.79	8898.29	4279.76	8773.09
Degrees of Freedom										
Among schools	11	12	11	12	11	12	11	12	11	12
Within schools	3147	2746	3147	2746	3147	2746	3147	2746	3147	2746
Mean Squares										
Among schools	25.81	21.92	36.69	17.64	30.50	23.67	89.08	36.50	26.31	16.54
Within schools	2.06	4.66	2.54	3.89	2.11	4.17	1.25	3.24	1.35	3.19
F Ratio	** 12.52	** 4.70	** 14.44	** 4.53	** 14.45	** 5.67	** 71.26	** 11.26	** 19.48	** 5.18
Totals										
Degrees of freedom	3158	2758	3158	2758	3158	2758	3158	2758	3158	2758
Sums of squares	6776.20	13050.95	8411.47	10901.71	6966.70	11752.04	4929.64	9336.30	4569.13	8971.41
Variance	2.146	4.732	2.664	3.953	2.206	4.261	1.561	3.385	1.447	3.253

** Significant at the 1% level

Table I-6

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in the Village-3 Group

(Village-Centered Systems, Middle of 5 Socio-economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	115.22	138.28	93.64	95.13	151.27	176.84	81.13	68.18	41.55	41.01
Within schools	1532.46	2309.59	2102.27	2048.27	1343.51	2303.97	967.09	2064.52	834.32	1701.32
Degrees of Freedom										
Among schools	8	8	8	8	8	8	8	8	8	8
Within schools	801	703	801	703	801	703	801	703	801	703
Mean Squares										
Among schools	14.40	17.29	11.71	11.89	18.91	22.11	10.14	8.52	5.19	5.13
Within schools	1.91	3.29	2.62	2.91	1.68	3.28	1.21	2.94	1.04	2.42
F Ratio	7.53	5.25	4.46	4.08	11.25	6.74	8.38	2.89	4.99	2.11
Totals										
Degrees of freedom	809	711	809	711	809	711	809	711	809	711
Sums of squares	1647.68	2447.87	2195.91	2143.40	1494.78	2480.81	1048.22	2132.70	875.84	1742.33
Variance	2.037	3.443	2.714	3.015	1.848	3.489	1.296	3.000	1.083	2.451

** Significant at the 1% level.

Table I-7

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in the Village-4 Group (Village-Centered Systems, Next to Lowest of 5 Socio-Economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	50.07	197.45	110.25	222.73	178.14	183.95	73.80	67.63	72.35	34.10
Within schools	2391.85	4051.52	3319.11	3163.76	2527.25	3526.80	1394.74	2020.83	3065.62	1612.54
Degrees of Freedom										
Among schools	8	8	8	8	8	8	8	8	8	8
Within schools	1438	1245	1438	1245	1438	1245	1438	1245	1438	1245
Mean Squares										
Among schools	625.88	2468.13	1378.13	2784.12	22.28	22.99	922.50	845.37	904.37	426.25
Within schools	166.33	325.42	230.81	254.12	1.76	2.83	96.93	162.19	213.03	129.41
F Ratio	** 3.76	** 7.58	** 5.97	** 10.96	** 12.66	** 8.12	** 9.5	** 5.2	** 4.24	** 3.29
Totals										
Degree of freedom	1446	1253	1446	1253	1446	1253	1446	1253	1446	1253
Sums of squares	2441.92	4248.97	3429.36	3386.49	2705.39	3710.75	1468.54	2088.46	3137.97	1646.64
Variance	1.689	3.391	2.372	2.703	1.871	2.961	1.016	1.667	2.170	1.314

** Significant at the 1% level.

Table I-8

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in the Rural-3 Group

(Rural Systems -- Middle Level of 5 Socio-Economic Levels)

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	26.44	114.68	8.93	57.89	4.91	51.40	18.68	47.88	8.35	19.95
Within schools	1250.98	2173.31	1654.24	1858.10	1308.45	2074.81	534.06	1182.13	742.29	1205.03
Degrees of Freedom										
Among schools	4	4	4	4	4	4	4	4	4	4
Within schools	632	539	632	539	632	539	632	539	632	539
Mean Squares										
Among schools	6.61	28.67	2.23	14.47	1.23	12.85	4.67	11.97	2.09	4.99
Within schools	1.98	4.03	2.62	3.45	2.07	3.85	8.5	2.19	1.17	2.24
F Ratio	** 3.33	** 7.11	** .85	** 4.19	** .59	** 3.33	** 5.49	** 5.46	** 1.78	** 2.22
Totals										
Degrees of freedom	636	543	636	543	636	543	636	543	636	543
Sums of squares	1277.42	2287.99	1663.17	1915.99	1313.36	2126.21	552.74	1230.01	750.64	1224.98
Variance	2.009	4.214	2.615	3.529	2.065	3.916	.869	2.265	1.180	2.256

** Significant at the 1% level.

Table I-9

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School Systems in Rural-4 Group

(Rural Systems, Middle of 5 Socio-economic Levels)

	Subjects									
	Vocabulary grade		Reading grade		Language grade		Work study skills grade		Arithmetic grade	
	4	7	4	7	4	7	4	7	4	7
Sums of squares										
Among schools	107.53	133.39	95.65	102.26	63.67	144.70	71.98	38.46	48.31	59.80
Within schools	6504.07	9856.24	4597.01	4491.99	3536.06	5034.34	2587.33	3035.11	2665.93	2874.67
Degrees of freedom										
Among schools	7	7	7	7	7	7	7	7	7	7
Within schools	1529	1181	1529	1181	1529	1181	1529	1181	1529	1181
Mean squares										
Among schools	15.36	19.06	13.66	14.61	9.10	20.67	10.28	5.49	6.90	8.54
Within schools	4.25	8.35	3.01	3.80	2.31	4.26	1.69	2.57	1.74	2.43
F Ratio	** 3.61	** 2.28	** 4.53	** 3.84	** 3.93	** 4.85	** 6.08	** 2.13	** 3.96	** 3.51
Totals										
Degrees of freedom	1536	1188	1536	1188	1536	1188	1536	1188	1536	1188
Sums of squares	6611.60	9989.63	4692.66	4594.25	3599.73	5179.04	2659.31	3073.57	2714.24	2934.47
Variance	4.304	8.409	3.055	3.867	2.344	4.359	1.731	2.587	1.767	2.470

** Significant at the 1% level.

Table I-10

Summary of Analyses of Variance for Fourth and Seventh Grade Pupil Performance on Iowa Test of Basic Skills by School System in Group of Large-City Systems

	Subjects									
	Vocabulary		Reading		Language		Work study skills		Arithmetic	
	grade		grade		grade		grade		grade	
	4	7	4	7	4	7	4	7	4	7
Sums of Squares										
Among schools	186.13	460.22	310.74	1568.81	212.69	1296.15	226.09	439.22	111.34	482.85
Within schools	12358.75	23388.28	16319.12	18382.02	36659.72	20543.97	8494.38	13846.96	18801.51	12619.71
Degrees of Freedom										
Among schools	8	8	8	8	8	8	8	8	8	8
Within schools	6490	5731	6490	5731	6490	5731	6490	5731	6490	5731
Mean Squares										
Among schools	23.27	57.53	38.84	196.10	126.59	150.77	28.26	54.90	13.92	60.36
Within schools	1.90	4.08	2.51	3.21	5.65	3.58	1.31	2.42	2.90	2.20
F ratio	12.24	14.10	15.47	61.09	4.70	42.11	21.57	22.68	4.89	27.43
Totals										
Degrees of freedom	6498	5739	6498	5739	6498	5739	6498	5739	6498	5739
Sums of squares	12544.88	23848.50	16629.86	19950.83	36872.41	21750.12	8720.47	14286.18	18912.85	13102.56
Variance	1.931	4.156	2.559	3.476	5.674	3.790	1.342	2.489	2.911	2.283

** Significant at the 1% level.

Table I-11

Summary of Analyses of Variance Among Ten Groups of Systems for Seventh Grade Pupil Performance on the Iowa Tests of Basic Skills: (Systems Classified into Ten Groups on Basis of Community Type and Socio-Economic Status)

	Seventh grade achievement by subjects				
	Vocabulary	Reading	Arithmetic	Language	Work skills
Degrees of freedom for:					
Main effect	9	9	9	9	9
Within	19 385	19 385	19 385	19 385	19 385
Total	19 394	19 394	19 394	19 394	19 394
Sums of squares					
Among groups	259 095	220 414	133 241	151 672	127 046
Within groups	8 905 834	7 260 439	4 507 461	8 106 219	5 633 347
Total	9 164 929	7 480 853	4 639 702	8 257 891	5 760 393
Mean squares					
Among groups	28 788	24 490	14 805	16 852	14 116
Within groups	459	375	232	418	291
f	62. 72 **	65. 30 **	63. 81 **	40. 31 **	48. 51 **

** Significant beyond the . 01-level of confidence.

APPENDIX J

ANALYSES OF REGRESSIONS DISCUSSED IN THIS REPORT

Analysis of One-variable Regression: Mean Achievement of Systems vs. Socio-economic Status of Pupils

(Grade 7)

Source	d. f.	Sum of squares	Mean squares	f
1 variable regression	1	662. 70	662. 70	50. 17 *
1 variable residual	86	1135. 96	13. 21	
Total	87	1798. 66		

* Significant at 1% level

Table J-2

Analysis of One-variable Regression Mean Achievement of Systems vs. Measured IQ of Pupils

(Grade 7)

Source	d. f.	Sum of squares	Mean Squares	f
1 variable regression	1	999. 86	999. 86	107. 4 *
1 variable residuals	86	800. 70	9. 31	
Total	87	1800. 56		

* Significant at 1% level

Table J-3

Analysis of Two-variable Regression: Mean Achievement of Systems vs. Socio-economic Level and Measured IQ (Grade 7)

Source	d. f.	Sum of squares	Mean squares	f
2 variable regression	2	1097.71	548.85	66.61*
2 variable residuals	85	700.85	8.24	
Total	87	1798.56		

* Significant at 1% level

Table J-4

Analysis of Regression Residuals among Ten Groups of Systems Classified by Community Type: One-variable Regression of Achievement (Composite Score at Grade 7) against Socio-economic Level of Pupils

Source	d. f.	Sums of squares of residuals	Mean squares	f
Among groups	9	215.09	23.90	2.89 *
Within groups	78	644.28	8.26	
Total	87	859.37		

* Significant at 1% level